GF-9191H
GF-9191E
GF-9191HB

SHARP Service Manual

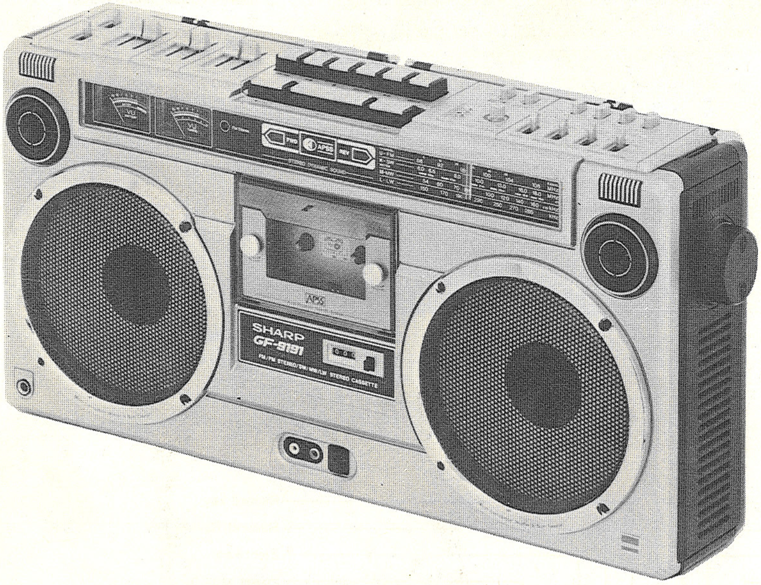


PHOTO : GF-9191H

APSS
Auto Program Search System

MODEL
GF-9191H
GF-9191E
GF-9191HB

In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

SPECIFICATIONS

GENERAL

Type:	Portable stereophonic cassette tape recorder with built-in LW/MW/SW/FM 4-band radio
Power source:	AC 110/220/240V, 50/60 Hz (GF-9191H/HB) AC 240V, 50/60 Hz (GF-9191E) DC 15V (Ten UM/SUM-1, R20, "D" size, HP2 batteries or External DC supply)
Power consumption:	35 W
Speaker:	16 cm (Woofer) x 2, 5 cm (Tweeter) x 2
Power output:	MPO 13W (6.5W+6.5W) (DIN45 324) (GF-9191H/HB) Dynamic Power 19W (9.5W+9.5W) (GF-9191E) AC Operation
Semiconductors:	6-IC (Integrated Circuit), 34-transistor and 30-diode (3-Light Emitting Diode)
Dimensions:	516mm(W) x 115mm(D) x 271mm(H)
Weight:	6.5 kg (without batteries)
Input terminals:	1 EXT. MIC. 600 ohms (J101-A, J101-C) 2 Mixing mic. 600 ohms (J401) 3 Remote control (J101-B) 4 EXT. DC power (J901) 5 AC input power (SO901) 6 REC/PB DIN socket, 2.5 mV/10 K ohms (SO101) 7 FM EXT. antenna (TB1) 8 PHONO (J103-A, J103-B)
Output terminals:	1 EXT. speaker, 4 ~ 8 ohms (SO102, SO103) 2 PHONES, 4 ~ 8 ohms (J603) 3 REC/PB DIN socket, 0.7 V/50 K ohms (SO101)

TAPE RECORDER SECTION

Type:	4-track stereo cassette tape recorder
Tape:	Philips type compact cassette tape
Tape speed:	4.8 cm/sec.
Recording system:	AC bias
Erasing system:	AC erasing
Recording time:	60 minutes (with C-60 tape)
Fast forward or rewind time:	120 sec. (with C-60 tape)
Frequency response:	40 ~ 15,000 Hz (CrO_2 tape) 40 ~ 12,000 Hz (Normal tape)
Wow and flutter:	0.25% (DIN45 511) (GF-9191H/HB) 0.2% (WRMS) (GF-9191E)
S/N ratio:	50 dB

RADIO SECTION

Frequency range:	LW 150 ~ 285 kHz MW 520 ~ 1,620 kHz SW 5.95 ~ 18 MHz FM 87.6 ~ 108 MHz
Intermediate frequency:	LW/MW/SW 455 kHz FM 10.7 MHz
Circuit system:	4-band superheterodyne system
Antenna:	LW/MW ferrite core bar antenna SW/FM telescopic antenna FM EXT. antenna

SHARP CORPORATION OSAKA, JAPAN

NAMES OF PARTS

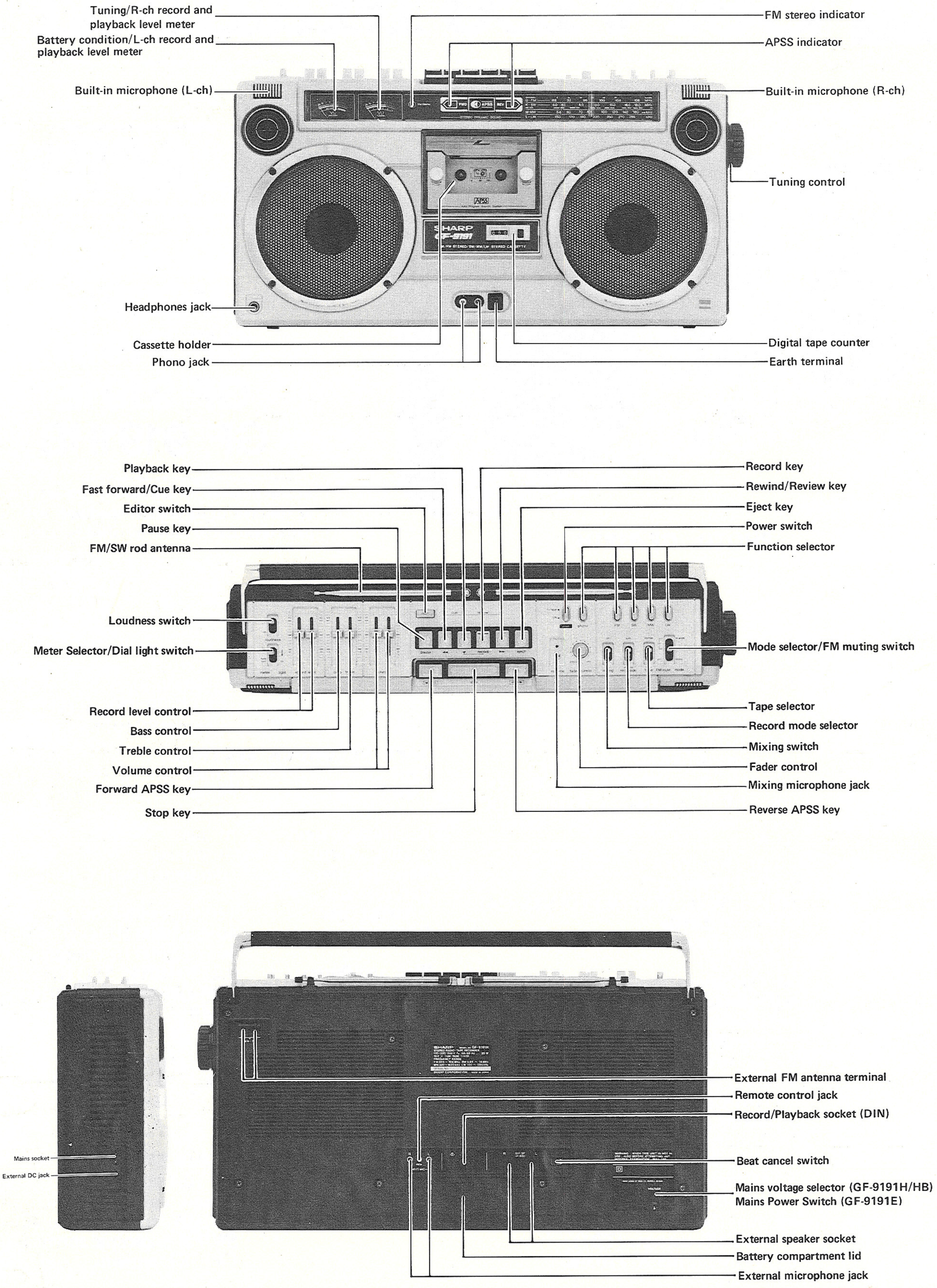

Tuning/R-ch record and playback level meter
Battery condition/L-ch record and playback level meter
Built-in microphone (L-ch)
FM stereo indicator
APSS indicator
Built-in microphone (R-ch)
Tuning control
Headphones jack
Cassette holder
Phono jack
Digital tape counter
Earth terminal
Playback key
Fast forward/Cue key
Editor switch
Pause key
FM/SW rod antenna
Loudness switch
Meter Selector/Dial light switch
Record level control
Bass control
Treble control
Volume control
Forward APSS key
Stop key
Record key
Rewind/Review key
Eject key
Power switch
Function selector
Mode selector/FM muting switch
Tape selector
Record mode selector
Mixing switch
Fader control
Mixing microphone jack
Reverse APSS key
Mains socket
External DC jack
External FM antenna terminal
Remote control jack
Record/Playback socket (DIN)
Beat cancel switch
Mains voltage selector (GF-9191H/HB)
Mains Power Switch (GF-9191E)
External speaker socket
Battery compartment lid
External microphone jack

Figure 1

DISASSEMBLY

A → B → C → D → E → F

A FRONT CABINET REMOVAL (Refer to Figures 2 and 3)

1. Pull out the power cord plug or adaptor plug from the unit.
2. Take out the cassette tape from the cassette holder.
3. Remove eight (8) screws retaining the front cabinet.
4. Open the battery compartment cover and remove one (1) screw retaining the front cabinet. (GF-9191E only).
5. Gently pull out the front cabinet and disconnect four (4) tips (Speaker) connected to the main P.W. board.

B OPERATION PANEL REMOVAL (Refer to Figure 3)

1. Remove the front cabinet as described in front cabinet removal.
2. Remove seven (7) knobs (RECORD LEVEL, BASS, TREBLE, VOLUME and FADER).
3. Gently lift up the operation panel from the back cabinet.

C DIAL SCALE PLATE REMOVAL (Refer to Figure 3)

1. Remove the operation panel as described in operation panel removal.
2. Remove four (4) screws retaining the dial scale plate.
3. Gently pull out the dial scale plate from the chassis.

D MECHANISM BLOCK REMOVAL (Refer to Figure 4)

1. Remove the dial scale plate as described in dial scale plate removal.
2. Disconnect the tip (Muting) and two (2) sockets (SO501, SO502) connected to the main P.W. board and the motor P.W. board.
3. Remove four (4) screws retaining the mechanism block.
4. Gently pull out the mechanism block from the main P.W. board holder.

E PHONO JACK PLATE REMOVAL (Refer to Figure 5)

1. Remove the mechanism block as described in mechanism block removal.
2. Remove two (2) screws retaining the phono jack plate.
3. Gently pull out the phono jack plate from the back cabinet.

F CHASSIS (P.W.B.) REMOVAL (Refer to Figure 5)

1. Remove the phono jack plate as described in phono jack plate removal.
2. Remove TUNING knob.
3. Disconnect four (4) tips (Antenna) and two (2) tips (DC supply) connected to the main P.W. board.
4. Remove seven (7) screws retaining the chassis (P.W.B.).
5. Gently pull out the chassis (P.W.B.) from the back cabinet.

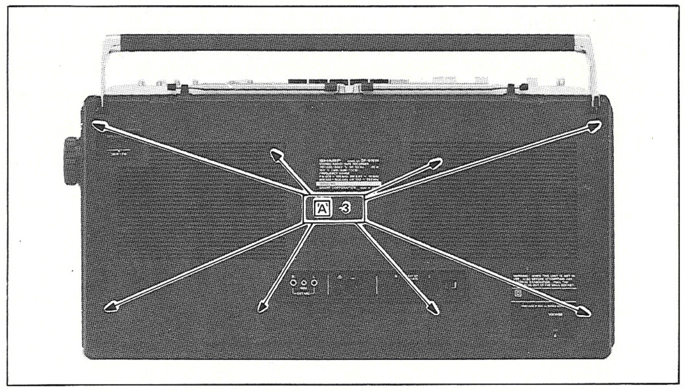


Figure 2

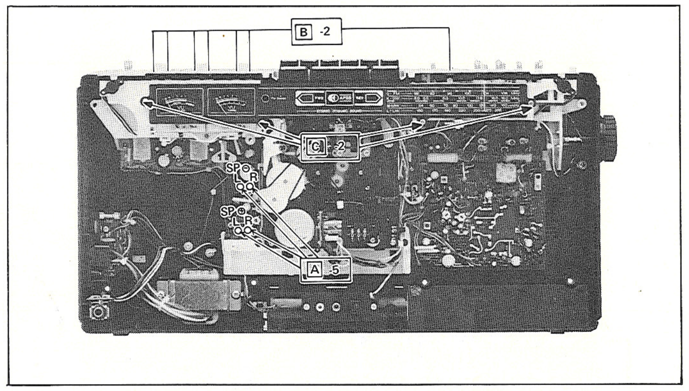


Figure 3

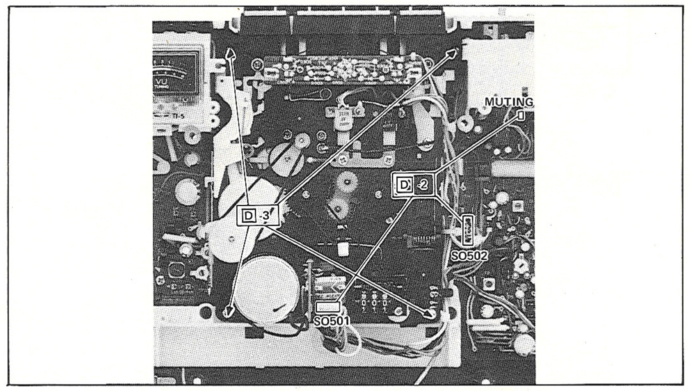


Figure 4

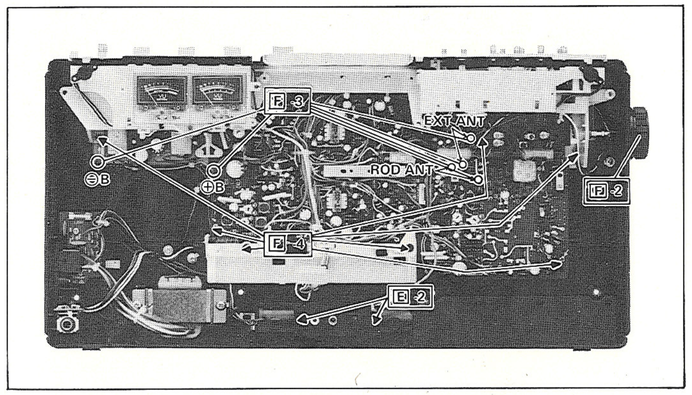


Figure 5

VOLTAGE SELECTION
(GF-9191H/HB only)

- Before operating the unit on mains, check the pre-set voltage. If the voltage is different from your local voltage, adjust the voltage as follows: Rotate the plug of the voltage selector by using a screwdriver so that your local voltage can be seen. (Refer to Figure 6)

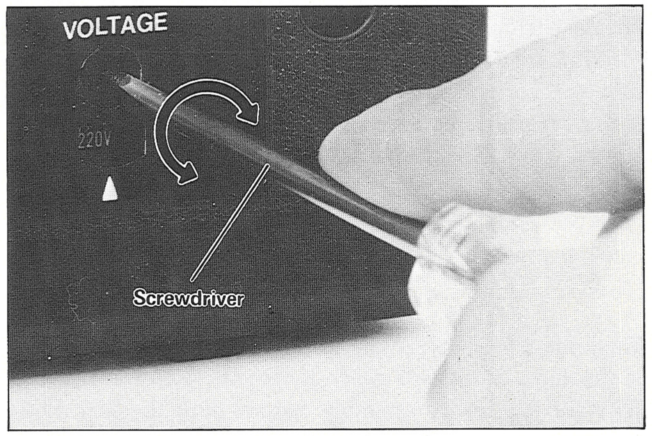


Figure 6

DIAL CORD STRINGING

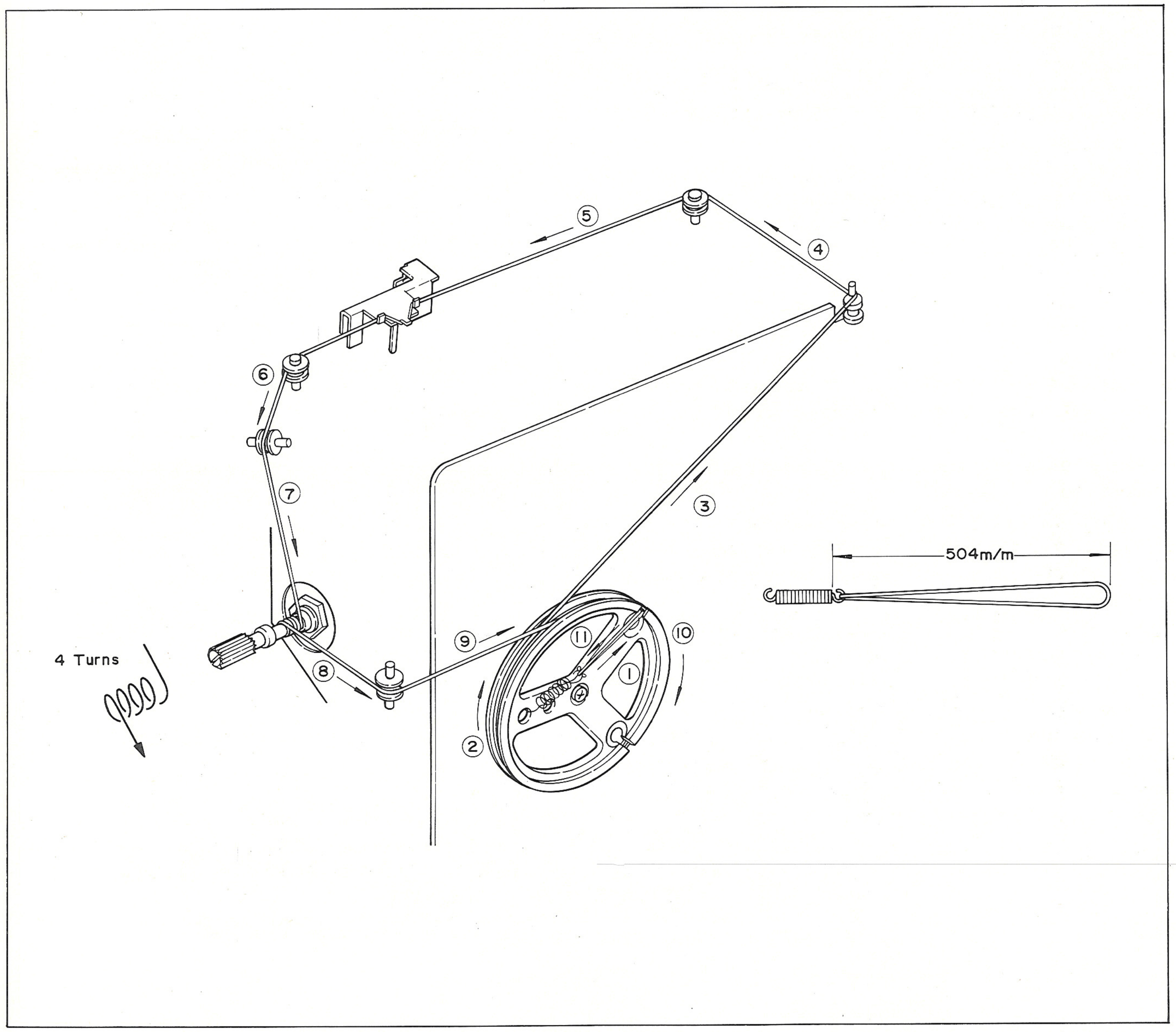


Figure 7

DESCRIPTION OF APSS

APSS is the abbreviation of Automatic Program Search System that permits advancing the tape past an unwanted selection to the beginning of the next program automatically with one push of a key. In this machine, the APSS in the reverse direction is also realized besides that in the forward play. That is to say, this unit is equipped FWD.-APSS key (◀) and REV.-APSS key (▶). In playback mode, when the FWD.-APSS key is depressed, the tape is fed at a high speed and is slowed down to a regular play speed at the beginning of the next selection. Or, when the REV.-APSS key is depressed, the tape is rewound at a high speed and is set to regular playback mode at the beginning of the selected program. The following explanation refers to the function of the APSS.

FUNCTION OF APSS

When the FWD.-APSS key is depressed in playback mode of the tape, the pinch roller is cleared from the flywheel shaft and the roller assembly meshes with the gear of the take-up turntable permitting the tape to advance at a normal fast forward speed. On the other hand, when the FWD.-APSS key is depressed, the FWD.-APSS switch (SW503) is turned "ON" so that +15V power be applied, via D503, to the APSS indicator circuit ①, muting circuit ② and APSS detection circuit ③ .

① APSS INDICATOR CIRCUIT

(Refer to Figure 9)

The current fed to the multi-vibration circuit actuates the circuit and permits the light emitting diode of D505 to flicker.

② MUTING CIRCUIT

The current fed to the muting circuit turns "ON" the Q112 and attenuates the signal from head to hold back the monitor noise.

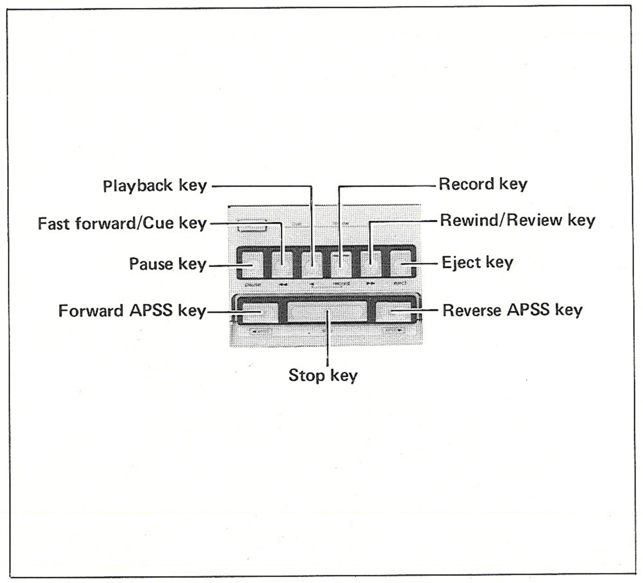

Playback key
Record key
Fast forward/Cue key
Rewind/Review key
Pause key
Eject key
Forward APSS key
Reverse APSS key
Stop key

Figure 8 FUNCTION KEY LAYOUT

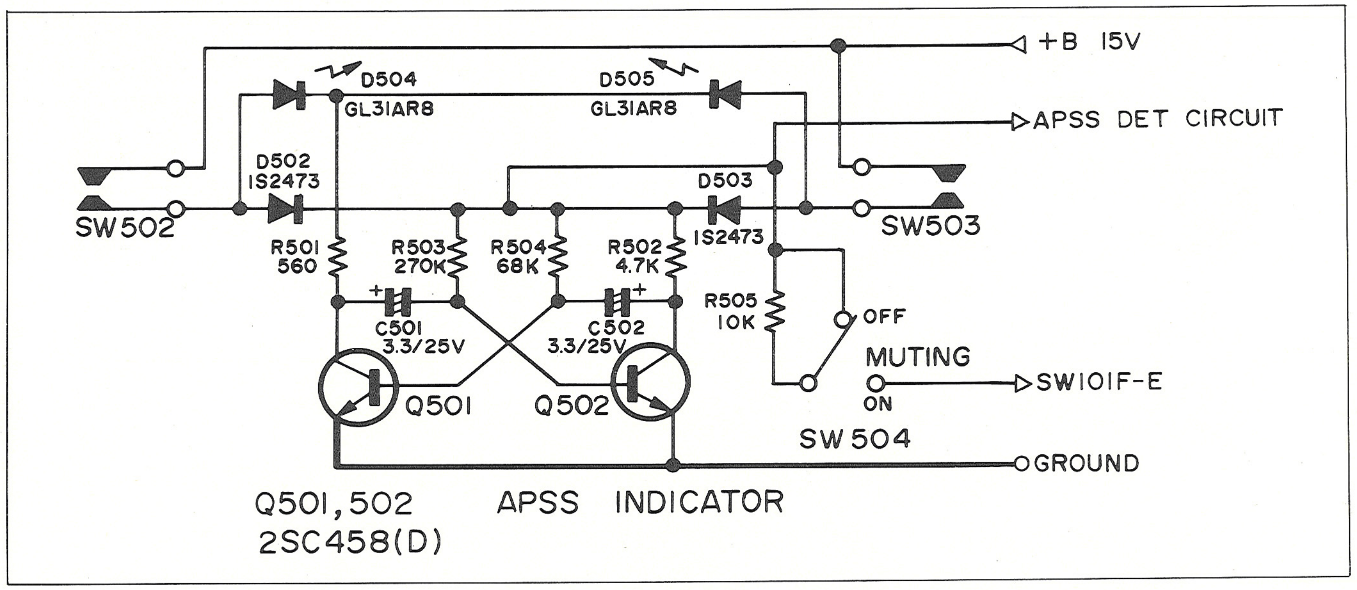

+B 15V
D504
GL3IAR8
D505
GL3IAR8
APSS DET CIRCUIT
D502
1S2473
D503
1S2473
SW502
SW503
R501 560
R503 270K
R504 68K
R502 4.7K
R505 10K
C501 3.3/25V
C502 3.3/25V
OFF
MUTING
ON
SWI01F-E
Q501
Q502
SW504
GROUND
Q501,502
2SC458(D)
APSS INDICATOR

Figure 9 APSS INDICATOR CIRCUIT

③ APSS DETECTION CIRCUIT

(Refer to Figures 10, 11 and 12)

The current fed to the APSS detection circuit drives the tape playback signal given from the record/playback head into the APSS pre-amp (IC701) through the equalizer amp (Q101 to Q104), turning "ON" the Q701, and now the signal is amplfied to exceed VBE (voltage between base and emitter) and charges the C706 up to +15 volts. Next, when the Q702 is turned "ON", the Q703 is turned "OFF", and the potential of the Q703 collector stabilizes at +15 volts. Therefore the Q704 is not turned "ON", in consequence, neither is the Q705. As a result, the plunger is not actuated. In other words, as far as the tape carries signals, the plunger does not work, that is, the tape is continuously fast forwarded according to the mechanism of the APSS. Meanwhile, when there is no signal on the tape, the potential, even if amplified by the equalizer amp (Q101 to Q104) and APSS pre-amp (IC701), becomes lower than VBE of Q701, which, therefore, is turned "OFF", and the electric charge of C706 (determined by the value of R706 and C706) is discharged at the time constant. When the potential of C706 is discharged to be below VBE of Q702, the Q702 is turned "OFF" and the Q703 is activated. Therefore, the collector potential of Q703 becomes zero (0) volt and, consequently, the +15 volt voltage passes through the R711, allowing a discharge current to flow towards the C707. By this discharge current, the potential of the Q704 base drops momentarily to zero (0) volt, and the Q704 is turned "ON".

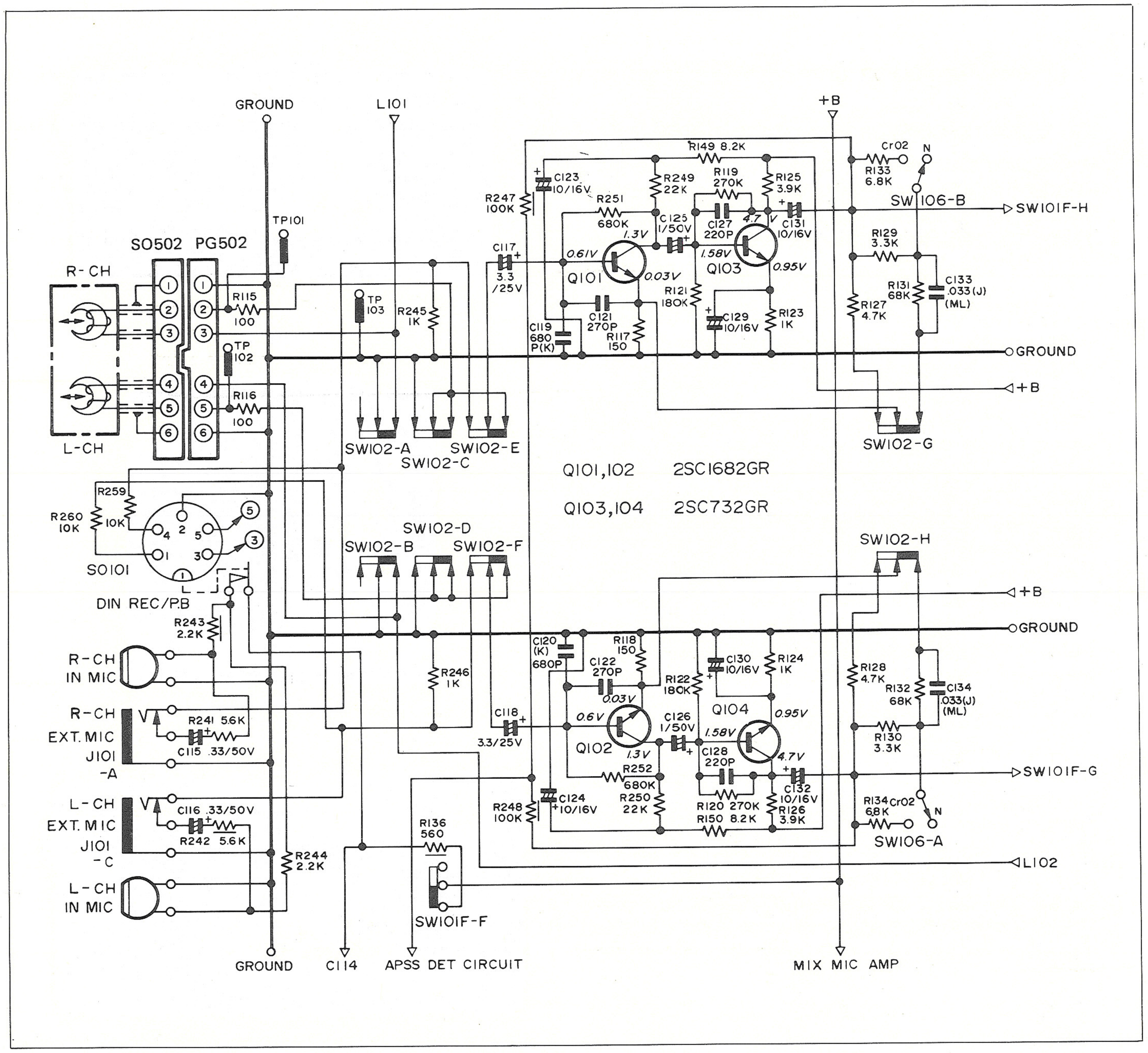

GROUND
L101
+B
TP101
SO502 PG502
R-CH
L-CH
R115 100
R116 100
TP 103
TP 102
R245 1K
R247 100K
C123 10/16V
R149 8.2K
R249 22K
R119 270K
R125 3.9K
R251 680K
C125 1/50V
C127 220P
C131 10/16V
C117 3.3/25V
0.6IV
1.3V
Q101
0.03V
1.58V
Q103
0.95V
C119 680P(K)
C121 270P
R117 150
R121 180K
C129 10/16V
R123 1K
Cr02
N
R133 6.8K
SW106-B
SWI01F-H
R129 3.3K
R131 68K
C133 .033(J) (ML)
R127 4.7K
GROUND
+B
SW102-G
SW102-A
SW102-E
SW102-C
Q101,102 2SC1682GR
Q103,104 2SC732GR
R259
R260 10K
SO101
SW102-D
SW102-B
SW102-F
SW102-H
DIN REC/PB
R243 2.2K
R-CH IN MIC
R-CH EXT. MIC J101 -A
R241 5.6K
C115 .33/50V
L-CH EXT. MIC J101 -C
C116 .33/50V
R242 5.6K
L-CH IN MIC
R246 1K
R244 2.2K
C120 (K) 680P
R118 150
C122 270P
R122 180K
C130 10/16V
R124 1K
C118 33/25V
0.03V
0.6V
Q102
1.3V
C126 1/50V
1.58V
Q104
0.95V
4.7V
C128 220P
R252 680K
R250 22K
C124 10/16V
R248 100K
R120 270K
R150 8.2K
C132 10/16V
R126 3.9K
R128 4.7K
R132 68K
C134 .033(J) (ML)
R130 3.3K
R134 68K
Cr02
N
SW106-A
SWI01F-G
L102
R136 560
SWI01F-F
GROUND
C114
APSS DET CIRCUIT
MIX MIC AMP

Figure 10 EQ AMP.

Accordingly, the potential of the C707 is permitted to be stabilized from zero (0) volt to +15 volts. When the potential exceeds VBE, the Q704 is turned "OFF". Then the Q704 is turned "ON", and +B is supplied to the base of Q705 through the R712, turning "ON" the Q705. Then, an end of the plunger is grounded and +15V is applied to the plunger, which, in turn, is actuated. When the Q704 is turned "OFF", the Q705 is also turned "OFF", cutting off the potential to the plunger. When the plunger is put in action, the APSS lockplate is stretched out to release the FWD-APSS key. Consequently, the FWD-APSS switch (SW503) is turned "OFF" and the pinch roller is pressed hard against the flywheel shaft. Moreover, the fastforwarding gear is disengaged from the gear of the takeup turntable, setting the unit in normal playback mode again. As the FWD-APSS switch (SW503) is turned "OFF", the light emitting diode of D505 stops flickering and the APSS limiter circuit is made inactive. Further, the muting circuit of Q112 also stops its function.
In the meantime, when the REV-APSS key is depressed the fast-forwarding gear meshes with the gear of supply turntable and the REV-APSS switch (SW502) is turned "ON" to set the tape in rewind mode, permitting the light emitting diode of D504 to flocker. The successive function is just as in the case of FWD-APSS behavior. This ends the explanation of the APSS performance.

Note However, that the APSS may malfunction when either one of following recordings is played back, but, remember, this is not a trouble.

1. A prolonged portion of pianissimo in music.
2. A blank portion in the midst of music (more than 3 seconds when measured in playback).
   - * In cases 1 & 2 the FWD-APSS or REV-APSS key, if depressed, resets itself and regular playback mode is resumed.
3. A too short interval between programs (about 1 second when measured in playback).
4. A noisy hum or buzz recorded in a blank portion.
   - * In cases 3 & 4 the condition doesn't allow the APSS circuit to work easily, and the blank portion couldn't be detected.
5. FWD-APSS key depressed within 10 seconds (as measured in playback) from the end of a preceding selection.
6. REV-APSS key depressed within 10 seconds (as measured in playback) from the beginning of a selection.
   - * In cases 5 & 6 the tape runs 10 or 30 times as fast as in playback mode if the FWD-APSS or REV-APSS key is depressed, therefore the tape skips a blank portion while the key is being depressed.

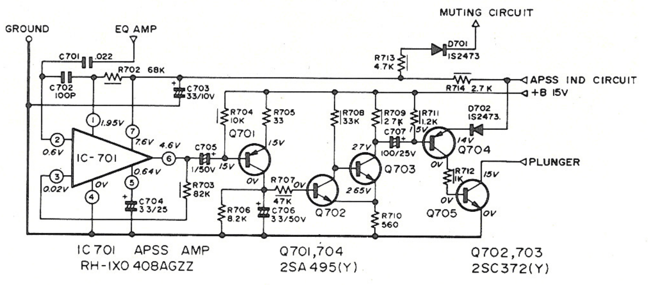

MUTING CIRCUIT
GROUND
EQ AMP
C701 .022
R702 68K
C702 100P
C703 33/10V
R713 4.7K
D701 IS2473
R714 2.7K
APSS IND CIRCUIT
+B 15V
R704 10K
R705 33
R708 33K
R709 2.7K
R711 1.2K
D702 IS2473.
1.95V
7.6V
4.6V
0.6V
IC-701
0.64V
0.02V
0V
C705 1/50V
15V
Q701
C707 100/25V
27V
14V
Q704
Q703
PLUNGER
R707 47K
R703 82K
C704 33/25
R706 8.2K
C706 33/50V
Q702
2.65V
R710 560
R712 1K
Q705
IC701 APSS AMP
RH-IX0408AGZZ
Q701,704
2SA495(Y)
Q702,703
2SC372(Y)

Figure 11 APSS DETECTION CIRCUIT

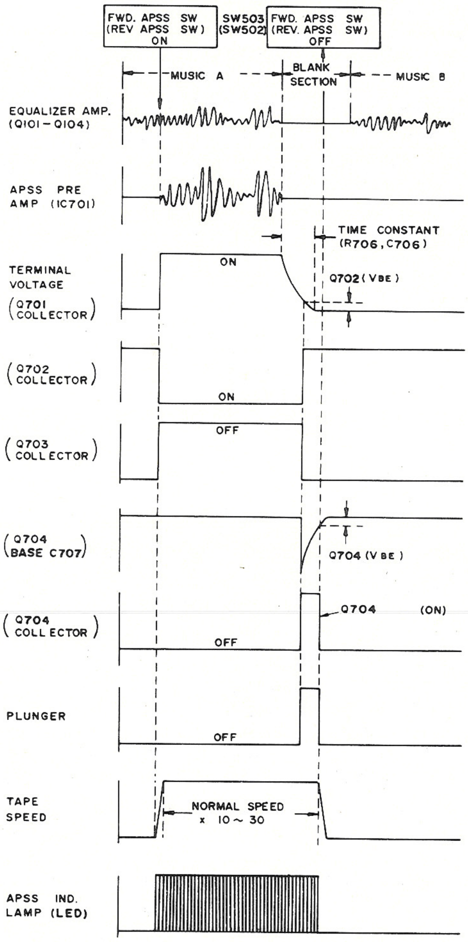

FWD. APSS SW (REV APSS SW) ON
SW503 (SW502)
FWD. APSS SW (REV. APSS SW) OFF
MUSIC A
BLANK SECTION
MUSIC B
EQUALIZER AMP. (Q101 – Q104)
APSS PRE AMP (IC701)
TIME CONSTANT (R706, C706)
TERMINAL VOLTAGE
(Q701 COLLECTOR)
ON
Q702 (VBE)
(Q702 COLLECTOR)
ON
(Q703 COLLECTOR)
OFF
(Q704 BASE C707)
Q704 (VBE)
(Q704 COLLECTOR)
Q704 (ON)
OFF
PLUNGER
OFF
TAPE SPEED
NORMAL SPEED x 10 ~ 30
APSS IND. LAMP (LED)

Figure 12 APSS MOVEMENT PRINCIPLE

MECHANICAL ADJUSTMENT

■ FLYWHEEL THRUST CLEARANCE ADJUSTMENT

(Refer to Figure 13)

1. Slowly rotate the flywheel thrust clearance adjusting screw clockwise until there will be no thrust clearance.
2. Next, rotate the thrust clearance adjusting screw about 1/4 of its full turn counter clockwise. (Since 1 pitch of the adjusting screw refers to 0.8 mm, the thrust clearance thus created becomes 0.1 mm to 0.3 mm.)

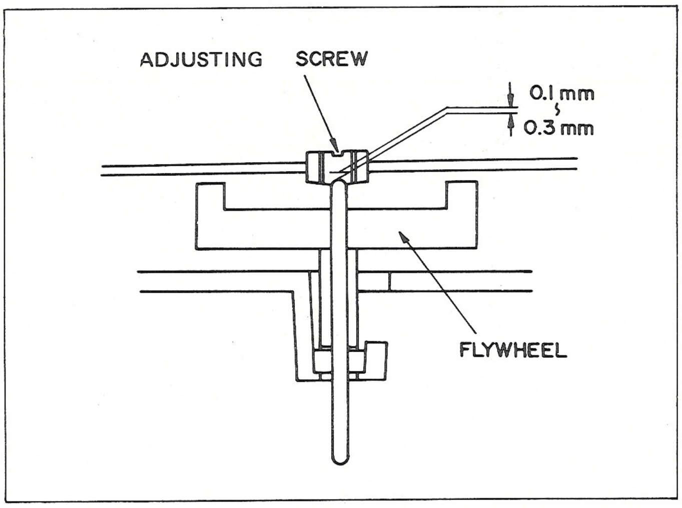


Figure 13

■ PINCH ROLLER PRESSURE ADJUSTMENT

(Refer to Figure 14)

1. Set the unit in PLAY mode.
2. Push the point Ⓐ with a tension gauge (0 gr. to 500 gr.) to make the pinch roller apart from the flywheel shaft. Then, check that the tension gauge will read 300 gr. to 400 gr. when the pinch roller stops to rotate.
3. As a result of the check in the step 2 above, if the reading is found outside the range of 300 gr. to 400 gr., adjust the pressure spring of pinch roller by bending it or replace.

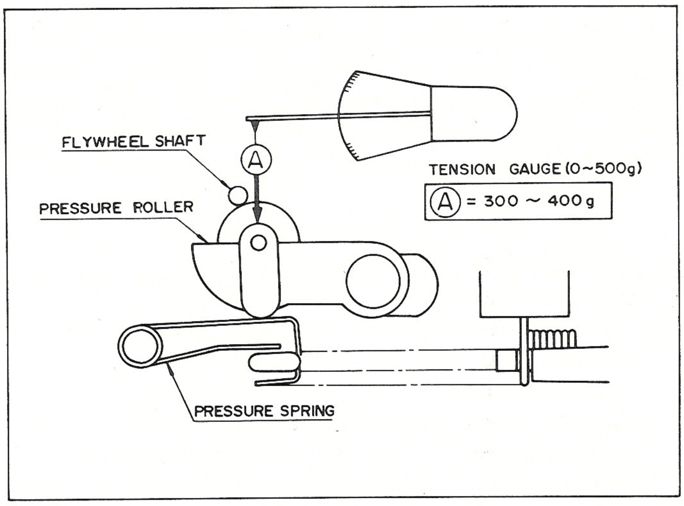


Figure 14

■ OPERATION CHECK OF FWD-APSS AND REV-APSS MECHANISMS

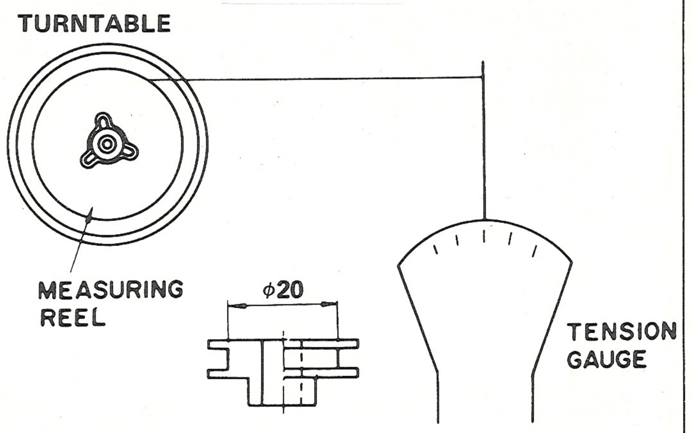
(Refer to Figures 40 and 41, Pages 31 and 32)

Under PLAY mode, slowly push the FWD-APSS key or REV-APSS key to make sure that the pinch roller (74) and the take-up idler (16) come off respectively from the flywheel shaft and the take-up turntable (65), and simultaneously the sub-chassis (09) moves 1 mm to 1.5 mm, and further that thereafter, the roller assembly (73) is pressed against the take-up turntable (65) or the supply turntable (66). Moreover, when the FWD-APSS key or REV-APSS key is released by pushing the FF (CUE) key or the REWIND (REVIEW) key, make ascertain that the sub-chassis (09) is reset and the unit gets in PLAY mode.

■ TORQUE MEASUREMENT AT PLAY, FF AND REWIND MODES

(Refer to Figure 15)

1. Mount a torque measuring reel on the turntable (that is, it is placed on the take-up turntable at PLAY/REWIND mode while on the supply turntable at REWIND mode).
2. Then gradually release the tension gauge and read it when the rotational speed of the turntable becomes almost constant.
3. Measured torques at each mode should be as tabulated below.
   Note: When the take-up turntable is stopped at PLAY mode, there should be no slip between the take-up turntable and take-up slip roller and/or between the drive belt and take-up slip roller.



MODE	MEASURED TORQUE
PLAY	35 ~ 60 gr.cm
FF	70 ~ 100 gr.cm
REWIND	70 ~ 100 gr.cm

Figure 15

■ GAP ADJUSTMENT BETWEEN MOTOR SWITCH AND BRAKE LEVER

(Refer to Figure 16)

1. Under each of PLAY, FF, and REWIND modes, make ascertain that the motor switch (SW501) is turned "ON" without fail.
2. When the motor is in a stop, check that the gap Ⓐ between the brake lever and the motor switch (SW501) is 2 mm to 3 mm.
3. If the steps 1 and 2 above are still insufficient for the adjustment, the gap can be adjusted by positionally changing the two soldered terminals Ⓑ of motor switch (SW501) located at the motor PWB with a soldering iron.

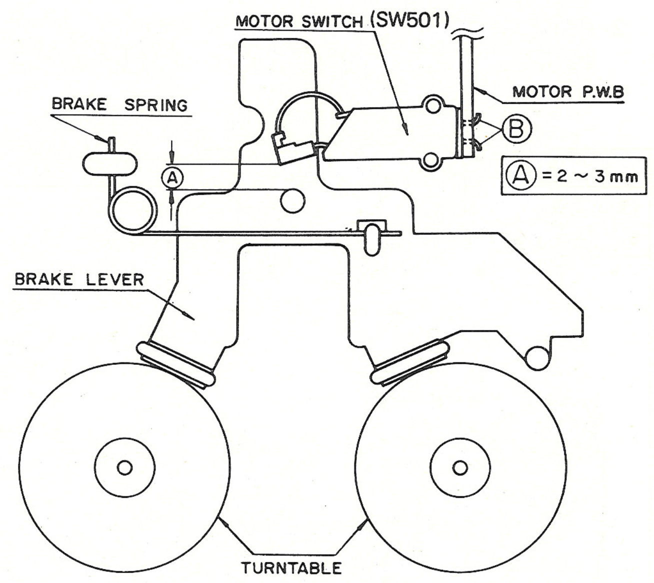


Figure 16

■ OPERATION CHECK OF PAUSE MECHANISM

(Refer to Figure 40, Page 31)

Set the unit in PLAY mode by pushing the key given a mark (◀). Then slowly push the PAUSE key and make ascertain that the take-up idler (16) and the pinch roller (74) come off respectively from the take-up turntable (65) and the flywheel shaft almost at the same time and check that each of the two gaps thus produced is about 0.5 mm.

■ ADJUSTMENT OF PLUNGER SETTING POSITION

(Refer to Figure 17)

1. Under FF mode, loosen the plunger retaining screw, hold up the part Ⓐ of the plunger by hand and while keeping the plunger in contact with the lock shaft, retighten the plunger retaining screw.
2. After the step 1, make sure of the following.
   - Check that each of the PLAY, FF (CUE), REWIND (REVIEW) keys can be locked smoothly.
   - Check that the FWD-APSS key and REV-APSS key can be locked smoothly and they further be released when the plunger operates.
   - Check that the plunger can start to operate smoothly when the STOP key is pushed to release the APSS keys.
3. After the step 2, the adjustments are not yet sufficient, again carry out the step 1.

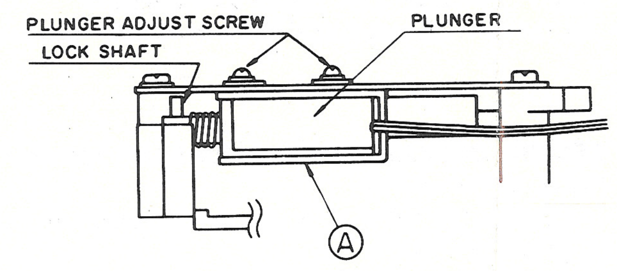


Figure 17

ELECTRICAL MEASUREMENT

- * This unit operaters on DC 15V. Check that the power supply is exactly 15V before measurement.
- * Set the POWER switch (SW101F) to "TAPE" position.
- * Refer to Figure 33.

■ RECORD OSCILLATOR BIAS CURRENT AND BIAS FREQUENCY ADJUSTMENT

(Refer to Figure 18)

1. Connect the V.T.V.M. across the 100 ohm resistors (R115, R116).
2. Place the unit in RECORD mode.
3. Adjust the semi-variable resistores (R301, R302) so that the V.T.V.M. reads 50 mV for the right channel (R115) and left channel (R116) respectively.
4. Make sure the record oscillator bias frequency is 53 ± 3 kHz.
5. As a result of the check in the step 5 above, if the reading is found outside the 53 ± 3 kHz, adjust the bias oscillation coil (L301)
6. After the step 5, again make sure of the bias current.

SWITCH	POSITION
BEAT CANCEL (SW301)	A
tape (SW106)	normal

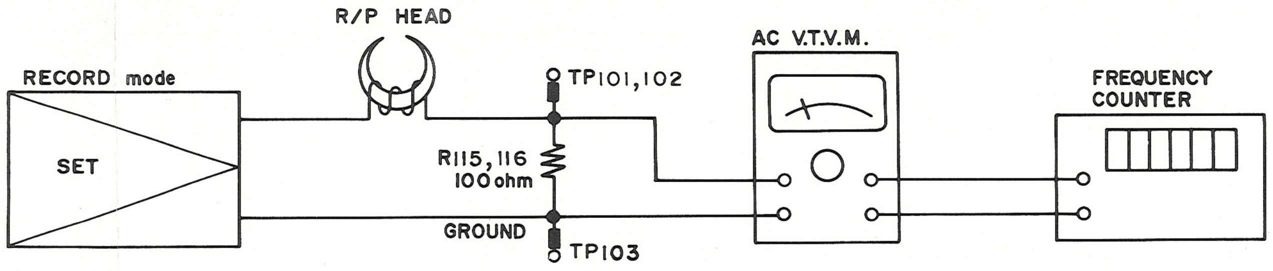

R/P HEAD
RECORD mode
SET
TP101,102
R115,116
100ohm
GROUND
TP103
AC V.T.V.M.
FREQUENCY COUNTER

Figure 18

■ ERASE CURRENT CHECK

(Refer to Figure 19)

1. Connect the V.T.V.M. across the 1 ohm resistor (R303).
2. Place the unit in RECORD mode.
3. Make sure the erase current is 100 ± 20 mV.

SWITCH	POSITION
BEAT CANCEL (SW301)	A

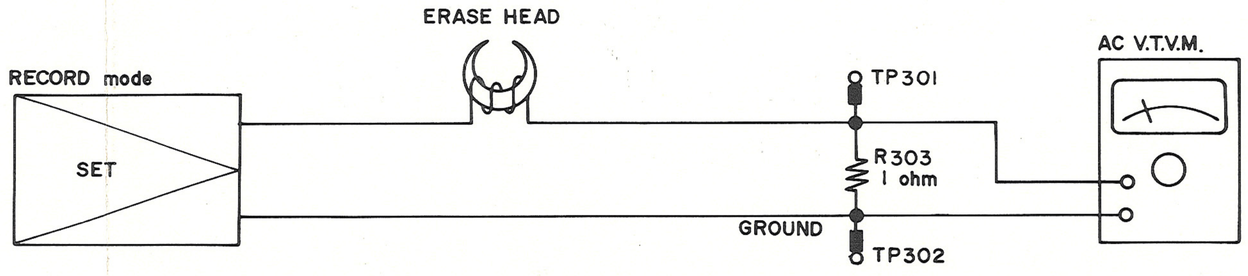

ERASE HEAD
RECORD mode
SET
TP301
R303
1 ohm
GROUND
TP302
AC V.T.V.M.

Figure 19

■ RECORD AMPLIFIER SENSITIVITY CHECK

(Refer to Figure 20)

1. Connect the V.T.V.M. across the 100 ohm resistors (R115, R116).
2. Short circuit the primary coil of the oscillation coil (L301) to stop bias oscillator.
3. Connect the signal generator to the EXT MIC jacks (J101-A, J101-C) and apply signal (1000 Hz, –78 dB) to the unit.
4. Place the unit in RECORD mode.
5. If the record amplifier sensitivity is normal, the reading on V.T.V.M. should be approximately 1.75 mV.

SWITCH	POSITION
rec mode (SW105)	manual
tape (SW106)	normal
mode (SW107)	stereo

VR CONTROL	POSITION
record level (R147)	maximum
record level (R148)	maximum

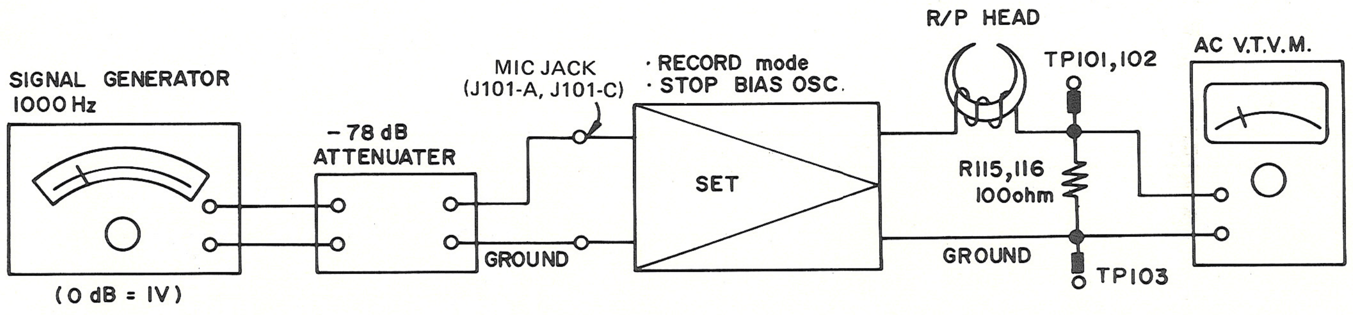

SIGNAL GENERATOR
1000 Hz
(0 dB = 1V)
–78 dB
ATTENUATER
MIC JACK
(J101-A, J101-C)
GROUND
· RECORD mode
· STOP BIAS OSC.
SET
R/P HEAD
TP101,102
R115,116
100ohm
GROUND
TP103
AC V.T.V.M.

Figure 20

■ PLAYBACK AMPLIFIER SENSITIVITY CHECK

(Refer to Figure 21)

1. Connect load resistor (4ohm) to the EXT. SP sockets (SO102, SO103) and further connect the V.T.V.M. thereto.
2. Connect the signal generator in series of the REC/PB head and apply signal (1000 Hz, –80 dB) to the unit.
3. Place the unit in PLAYBACK mode.
4. If the playback amplifier sensitivity is normal, the reading on the V.T.V.M. should be approximately 1.0 V.

SWITCH	POSITION
tape (SW106)	normal
mode (SW107)	stereo

VR CONTROL	POSITION
volume (R227, R228)	maximum
treble (R195, R196)	mechanical center
bass (R201, R202)	mechanical center

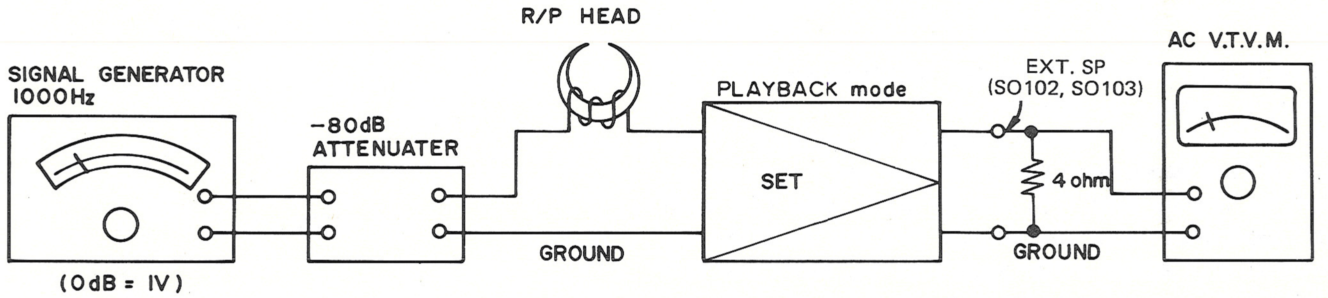

SIGNAL GENERATOR
1000Hz
(0dB = 1V)
–80dB
ATTENUATER
R/P HEAD
GROUND
PLAYBACK mode
SET
EXT. SP
(SO102, SO103)
4 ohm
GROUND
AC V.T.V.M.

Figure 21

■ PHONO AMPLIFIER SENSITIVITY CHECK

(Refer to Figure 22)

1. Connect load resistor (4ohm) to the EXT. SP sockets (SO102, SO103) and further connect the V.T.V.M. thereto.
2. Connect the signal generator to the phono jacks (J103-A, J103-B) and apply signal (1000 Hz, –54 dB) to the unit.
3. Place the unit in PHONO mode.
4. If the phono amplifier sensitivity is normal, the reading on the V.T.V.M. should be approximately 2.8 V.

SWITCH	POSITION
mode (SW107)	stereo

VR CONTROL	POSITION
volume (R227, R228)	maximum
treble (R195, R196)	mechanical center
bass (R201, R202)	mechanical center

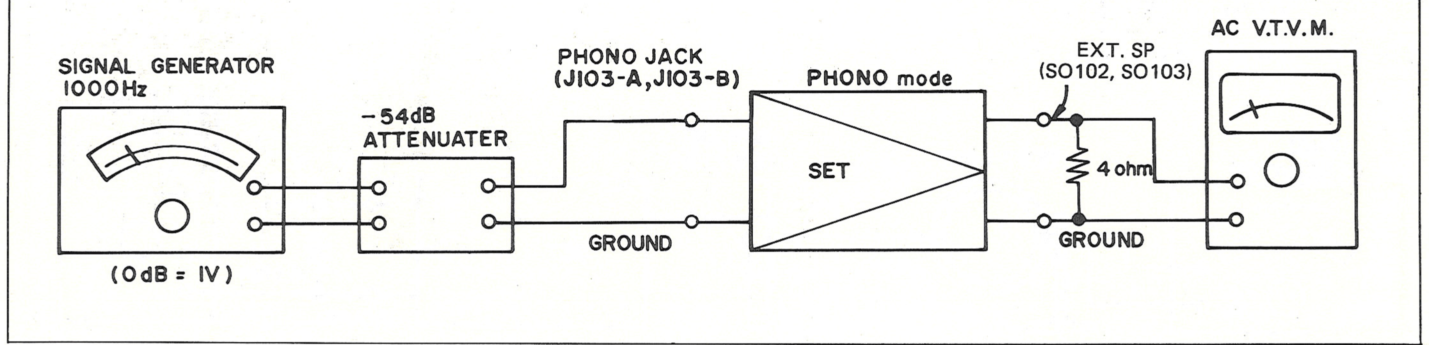

SIGNAL GENERATOR
1000Hz
(0dB = 1V)
–54dB
ATTENUATER
PHONO JACK
(J103-A,J103-B)
GROUND
PHONO mode
SET
EXT. SP
(SO102, SO103)
4 ohm
GROUND
AC V.T.V.M.

Figure 22

■ SWING ADJUSTMENT OF VU METER

(Refer to Figures 20 and 23)

1. Apply signal (1 kHz, –60 dB) to the EXT. MIC jacks (J101-A, J101-C)
2. Adjust the record volume controls (R147, R148) so that the V.T.V.M. reads 3.5 mV.
3. Rotate the semi-variable resistors (R187, R188) to adjust so that each of the two VU meters (ME101, ME102) indicates around "0" VU and swings to the same extent in right and left of the position "0" VU.

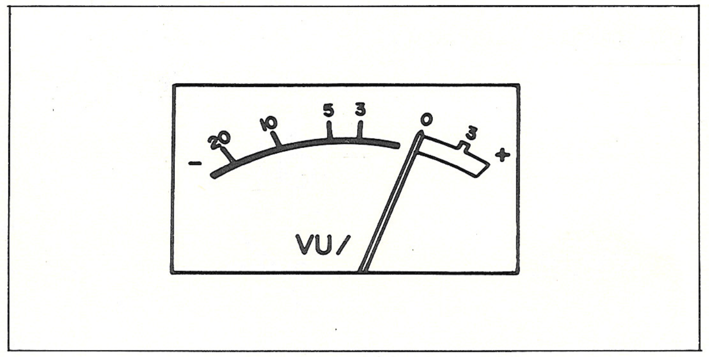

-
20
10
5
3
0
3
+
VU

Figure 23

■ RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

(Refer to Figure 24.)

1. Connect load resistor (4ohm) to the EXT. SP sockets (SO102, SO103) and connect outputs of both the right and left channels to the vertical and horizontal input terminals of oscilloscope.
2. Insert the test tape (MTT-114, 10 kHz, –10 dB Recorded).
3. Place the unit in PLAYBACK mode.
4. Adjust the head azimuth adjusting screw so that Lissajou's waveform attains the maximum and the same phase in right and left.
5. Even without using the oscilloscope, also adjust the head azimuth adjusting screw so that outputs of both the right and left channels attain the maximum and the same phase in right and left, and as a result, the output won't be decreased so much considerably even when the mode switch (SW107) is set to "mono".

SWITCH	POSITION
mode (SW107)	stereo

VR CONTROL	POSITION
volume (R227, R228)	maximum
treble (R195, R196)	mechanical center
bass (R201, R202)	mechanical center

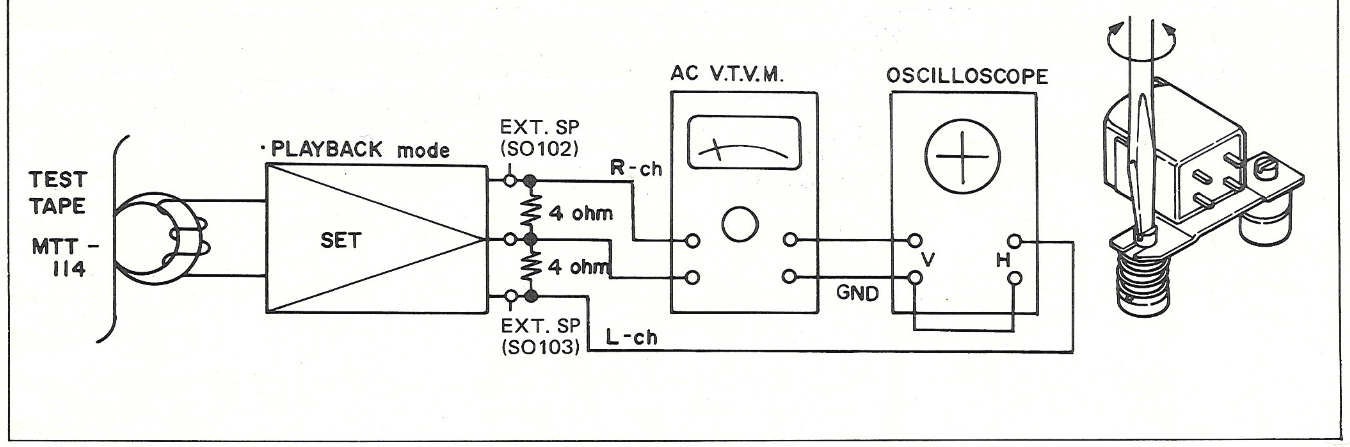

TEST
TAPE
MTT -
114
PLAYBACK mode
SET
EXT. SP
(SO102)
R-ch
4 ohm
4 ohm
EXT. SP
(SO103)
L-ch
AC V.T.V.M.
OSCILLOSCOPE
V
H
GND

Figure 24

GENERAL ALIGNMENT INSTRUCTION

Should it become necessary at any time to check the alignment of this receiver, proceed as follows;

1. Set the volume control (R227, R228) to maximum.
2. Attenuate the signals from the generator enough to swing the most sensitive range of the output meter.
3. Use a non-metallic alignment tool.
4. Repeat adjustments to insure good results.
5. Set the POWER switch (SW101F) to "ON" position.

THE INSTRUCTION OF FREQUENCY ADJUSTMENT (GF-9191H/HB)

In order to comply with FTZ rule: Nr. 358/1970, please fix the low end of dial frequency (87.5MHz) and the high end of dial frequency (107.9MHz) on FM band, by adjusting oscillation coils (L3 and L4) and oscillation trimmer (TC2), respectively, as illustrated in Figure 33.

AM ALIGNMENT CHART

(Refer to Figure 33)

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
			CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	MW	IF	Refer to Figure 25	Exactly 455 kHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Adjust for maximum output.	Adjust the AM IF transformers (T3) (T4)
2	MW	Band Coverage	Refer to Figure 25	Exactly 510 kHz. (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity).	Adjust for maximum output.	Adjust the MW oscillation coil (L9).
3	MW		Same as step 2.	Exactly 1650 kHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity).	Same as step 2.	Adjust the MW oscillation trimmer (TC7).
4	MW	Tracking	Same as step 2.	Exactly 600 kHz. (400 Hz, 30%, AM modulated)	600 kHz.	Same as step 2.	Adjust the MW antenna coil (L7) (See Note A)
5	MW		Same as step 2.	Exactly 1400 kHz. (400 Hz, 30%, AM modulated)	1400 kHz.	Same as step 2.	Adjust the MW antenna trimmer (TC4). (See Note A)
6	MW		Repeat steps 2, 3, 4, and 5 until no further improvement can be made.				
7	LW	Band Coverage	Same as step 2.	Exactly 145 kHz. (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity)	Same as step 2.	Adjust the LW oscillation coil (L10).
8	LW		Same as step 2.	Exactly 295 kHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the LW oscillation trimmer (TC8).
9	LW	Tracking	Same as step 2.	Exactly 160 kHz. (400 Hz, 30%, AM modulated)	160 kHz.	Same as step 2.	Adjust the LW antenna coil (L7).
10	LW		Same as step 2.	Exactly 260 kHz. (400 Hz, 30%, AM modulated)	260 kHz.	Same as step 2.	Adjust the LW antenna trimmer (TC5).
11	LW		Repeat steps 7, 8, 9 and 10 until no further improvement can be made.				
12	SW	Band Coverage	Refer to Figure 26	Exactly 5.85 MHz (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity)	Same as step 2.	Adjust the SW oscillation coil (L8).
13	SW		Same as step 12.	Exactly 18.5 MHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the SW oscillation trimmer (TC6).
14	SW	Tracking	Same as step 12.	Exactly 6.5 MHz. (400 Hz, 30%, AM modulated)	6.5 MHz	Same as step 2.	Adjust the SW antenna coil (L6).
15	SW		Same as step 12.	Exactly 16 MHz (400 Hz, 30%, AM modulated)	16 MHz	Same as step 2.	Adjust the SW antenna trimmer (TC3).
16	SW		Repeat steps 12, 13, 14 and 15 until no further improvement can be made.				

Note A Check the alignment of the receiver antenna coil by bringing a piece of ferrite (such as a coil slug) near the antenna loop stick, then a piece of brass. If ferrite increases output, loop requires more inductance. If brass increases output, loop requires less inductance. Change loop inductance by sliding the bobbin toward the center of ferrite core to increase inductance, or away to decrease inductance.

AM IF → MW Switch (SW101B): ON
MW RF→ MW Switch (SW101B): ON
LW RF → LW Switch (SW101A): ON

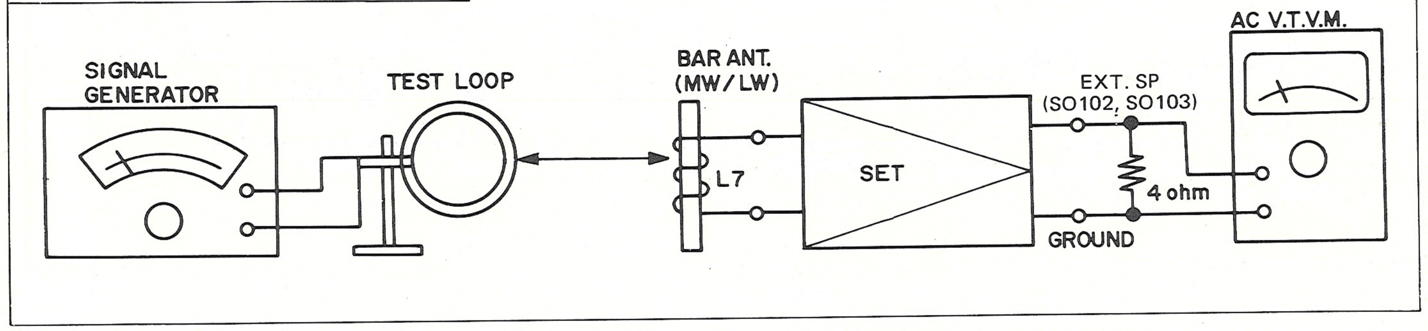


Figure 25 AM IF and MW/LW RF ALIGNMENT EQUIPMENT CONNECTION

SW Switch (SW101C): ON

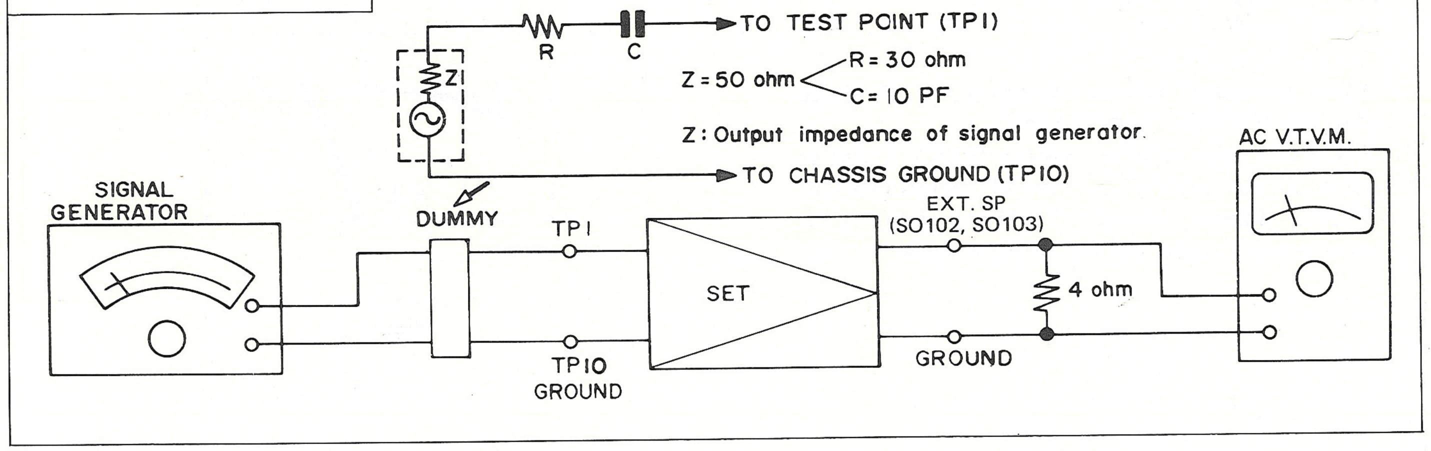


Figure 26 SW RF ALIGNMENT EQUIPMENT CONNECTION

FM ALIGNMENT CHART

(Refer to Figure 33)

STEP	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
		CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	IF	Refer to Figure 27	Exactly 10.7 MHz. (400 Hz, 30%, FM modulated)	High end of dial. (minimum capacity)	Adjust for maximum output.	Adjust the FM IF transformers 1. (T1) 2. (T2) (See Note B)
2	Band Coverage	Refer to Figures 28 and 32	Exactly 87.1 MHz (400 Hz, 30%, FM modulated)	Low end of dial. (maximum capacity)	Adjust for maximum output.	Adjust the FM oscillation coils (L3, L4).
3		Same as step 2.	Exactly 108.5 MHz. (400 Hz, 30%, FM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the FM oscillation trimmer (TC2).
4	Tracking	Same as step 2.	Exactly 88 MHz. (400 Hz, 30%, FM modulated)	88 MHz	Same as step 2.	Adjust the FM RF coils (L1, L2).
5		Same as step 2.	Exactly 108 MHz. (400 Hz, 30%, FM modulated)	108 MHz	Same as step 2.	Adjust the FM RF trimmer (TC1).
6	Repeat steps 2, 3, 4 and 5 until no further improvement can be made.					

FM Switch (SW101D): ON
mode switch (SW107): mono

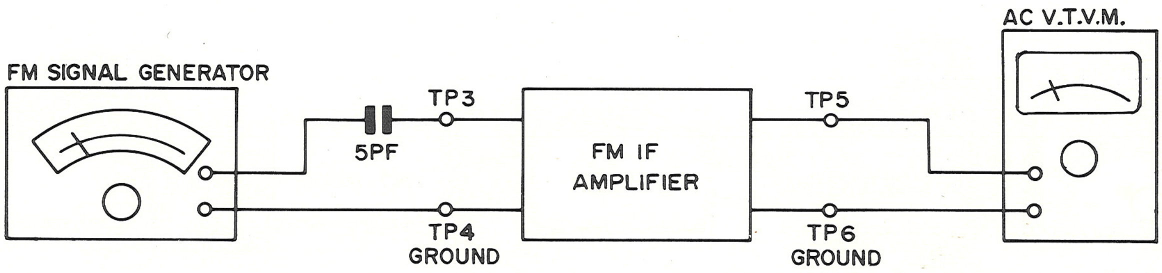

AC V.T.V.M.
FM SIGNAL GENERATOR
TP3
5PF
FM IF AMPLIFIER
TP5
TP4 GROUND
TP6 GROUND

Figure 27 FM IF ALIGNMENT EQUIPMENT CONNECTION

FM Switch (SW101D): ON
mode switch (SW107): mono

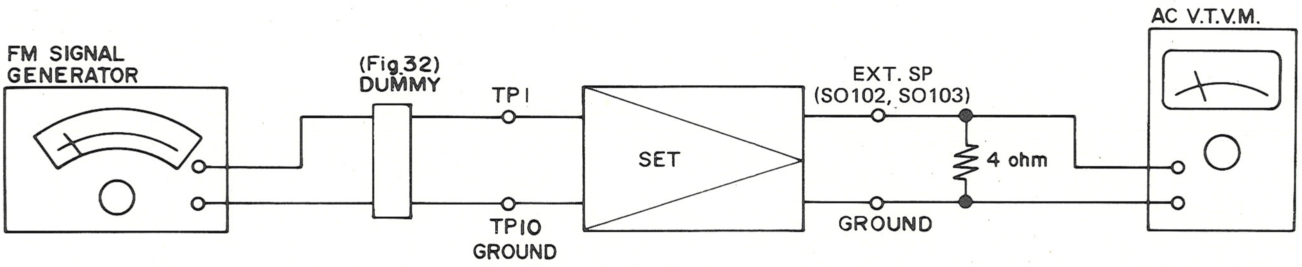
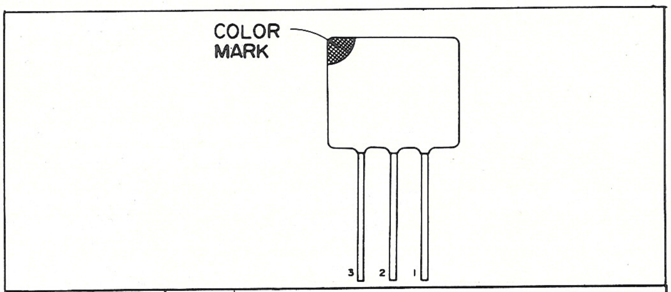

FM SIGNAL GENERATOR
(Fig.32) DUMMY
TP1
SET
EXT. SP (SO102, SO103)
4 ohm
AC V.T.V.M.
TP10 GROUND
GROUND

Figure 28 FM RF ALIGNMENT EQUIPMENT CONNECTION

Note B (Refer to Figure 29)

There are 5 kinds of ceramic filters (CF101, CF102) available with this unit and they are given color indication as tabulated below to differentiate the central frequency from one to another among them. When using them, be sure to make the two of the same type a pair.

When other ceramic filters than the one (red) having the central frequency of 10.7 MHz are used, note that a marker (10.7 MHz) of FM sweep generator, if used, will be deviated -- therefore, adjust the generator by putting off the marker.


COLOR MARK
3
2
1

Central frequency (fo)	D	Black:	10.64 MHz ± 30 kHz
	B	Blue:	10.67 MHz ± 30 kHz
	A	Red:	10.70 MHz ± 30 kHz
	C	Orange:	10.73 MHz ± 30 kHz
	E	White:	10.76 MHz ± 30 kHz

Figure 29

FM MPX ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
	CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	Refer to Figures 30 and 32	Exactly 98 MHz (54 dB) un modulated.	98 MHz	Adjust for 19 ± 0.1 kHz.	Adjust the semi-variable resister (R34)

FM Switch (SW101D): ON
mode switch (SW107): stereo

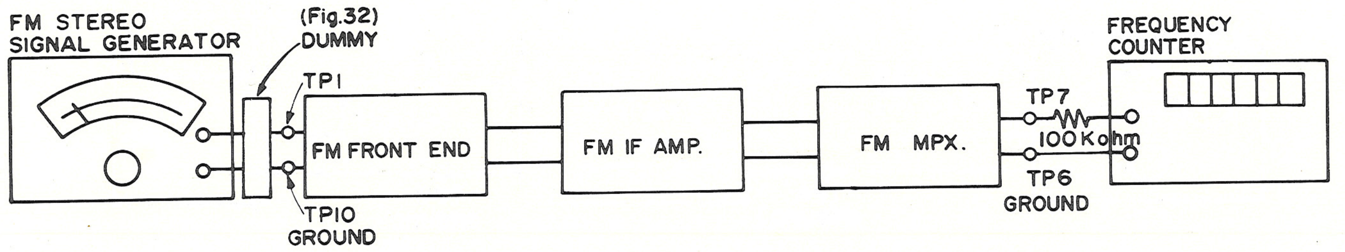

FM STEREO SIGNAL GENERATOR
(Fig.32) DUMMY
TP1
TP10 GROUND
FM FRONT END
FM IF AMP.
FM MPX.
TP7
100 Kohm
TP6 GROUND
FREQUENCY COUNTER

Figure 30 FM MPX ALIGNMENT EQUIPMENT CONNECTION

FM STEREO INDICATOR LIGHTING LEVEL ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
	CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	Refer to Figures 31 and 32	Exactly 98 MHz (20 dB) (19 kHz, 10%, FM modulated)	98 MHz	Adjust for the indicator starts lighting.	Adjust the semi-variable resister (R22)

FM Switch (SW101D): ON
mode switch (SW107): stereo

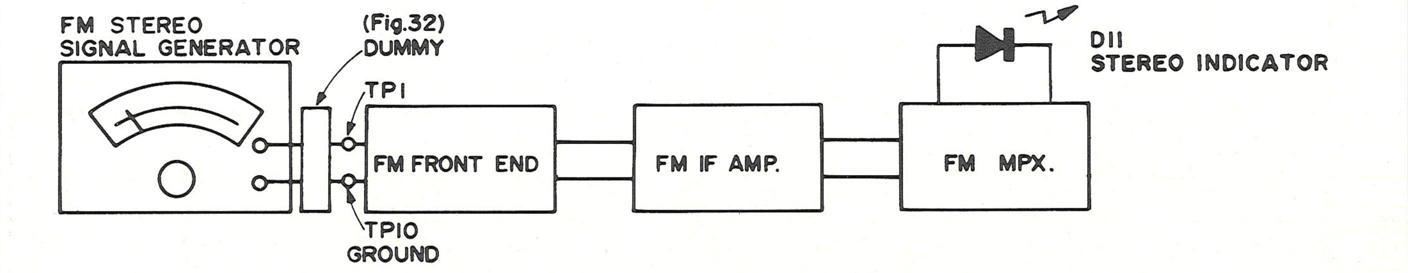
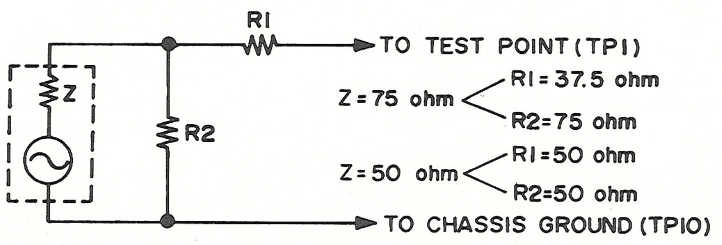

FM STEREO SIGNAL GENERATOR
(Fig.32) DUMMY
TP1
TP10 GROUND
FM FRONT END
FM IF AMP.
FM MPX.
D11 STEREO INDICATOR

Figure 31 FM STEREO INDICATOR LIGHTING LEVEL ALIGNMENT EQUIPMENT CONNECTION


R1
TO TEST POINT (TP1)
Z
R2
Z=75 ohm
R1=37.5 ohm
R2=75 ohm
Z=50 ohm
R1=50 ohm
R2=50 ohm
TO CHASSIS GROUND (TP10)

Z: Output impedance of signal generator

Figure 32 FM DUMMY

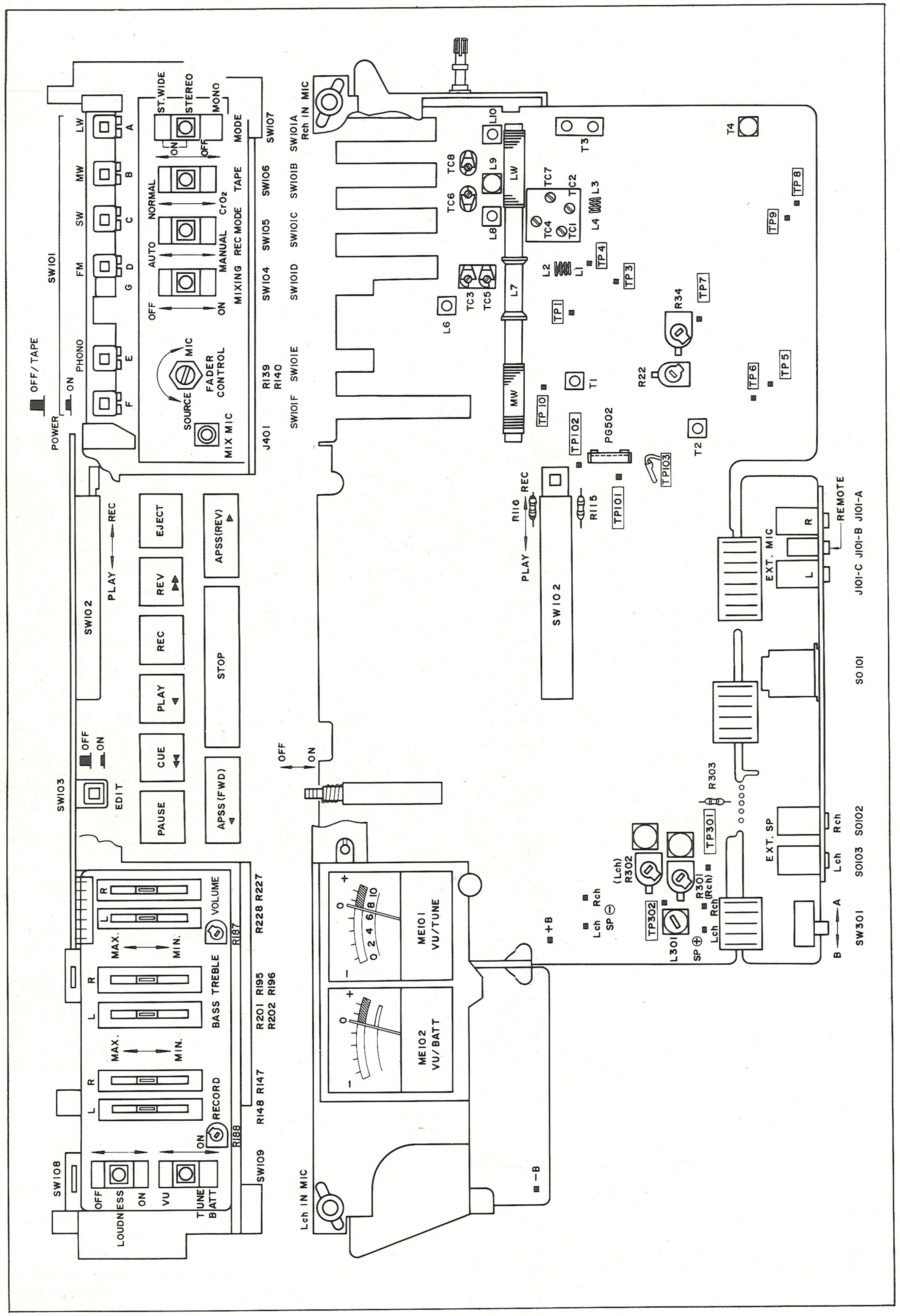
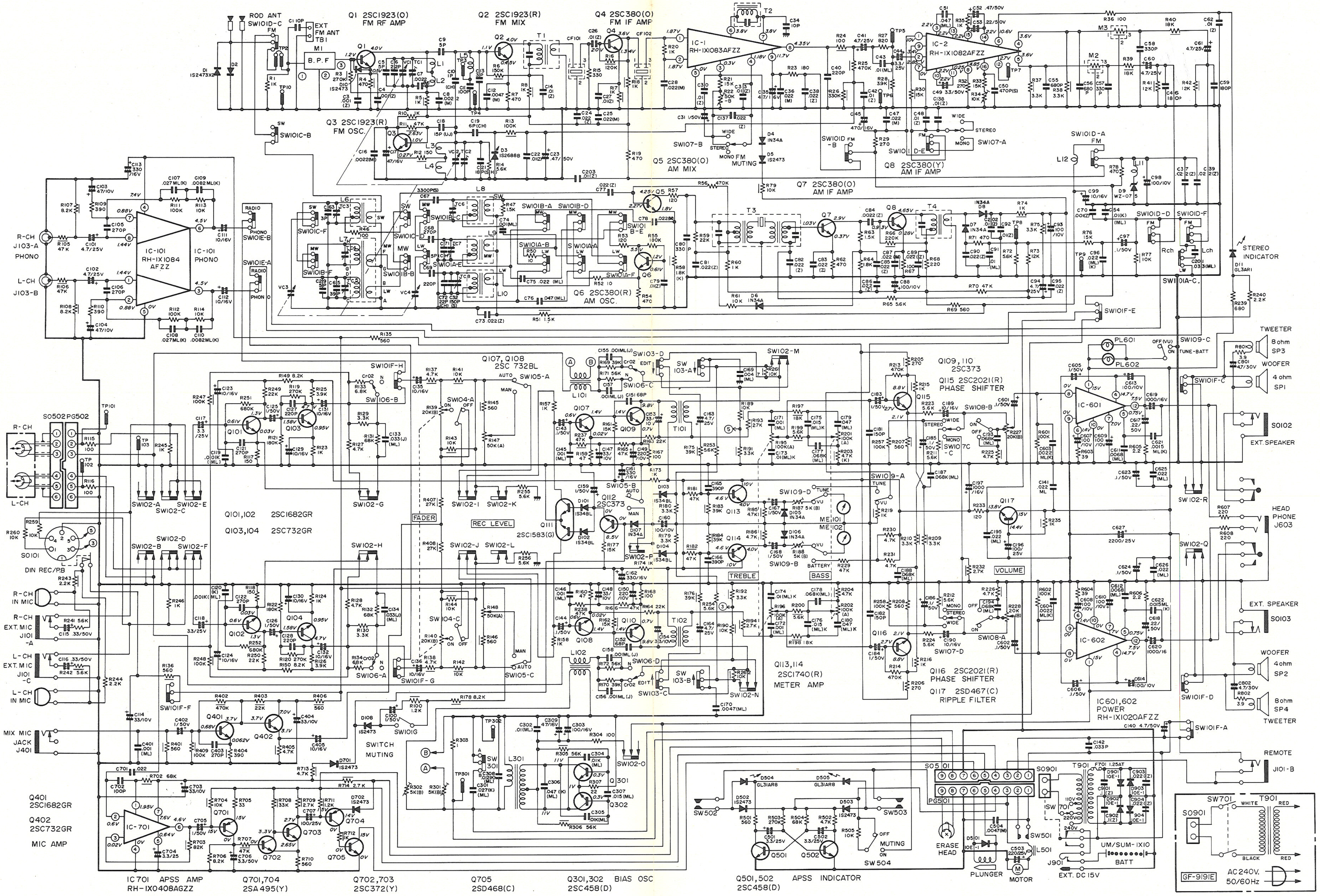

SW101
LW
MW
SW
FM
PHONO
POWER
OFF/TAPE
ON
ST.WIDE
STEREO
MONO
MODE
SW107
NORMAL
CrO2
TAPE
SW106
AUTO
MANUAL
REC MODE
SW105
OFF
ON
MIXING
SW104
MIC
SOURCE
FADER CONTROL
MIX MIC
J401
R139
R140
SW101A
SW101B
SW101C
SW101D
SW101E
SW101F
Rch IN MIC
L10
TC8
L9
TC6
L8
LW
TC7
TC4
TC1
TC2
L4
L3
T3
T4
TC3
TC5
L2
L1
L7
L6
TP1
TP4
TP3
TP8
TP9
TP7
R34
TP6
TP5
R22
MW
TP10
T1
TP102
PG502
TP103
TP101
T2
REC
PLAY
R116
R115
SW102
EJECT
REV
REC
PLAY
CUE
PAUSE
APSS (REV)
STOP
APSS (FWD)
SW103
EDIT
REMOTE
EXT. MIC
J101-A
J101-B
J101-C
S0101
R303
TP301
EXT. SP
Rch
Lch
S0102
S0103
SW301
R302
R301
TP302
L301
SP⊕
SP⊖
+B
−B
ME101 VU/TUNE
ME102 VU/BATT
VOLUME
R187
BASS
TREBLE
MAX.
MIN.
R228 R227
R201 R195
R202 R196
R148 R147
RECORD
R188
SW109
SW108
LOUDNESS
VU
TUNE
BATT
Lch IN MIC

Figure 33 ALIGNMENT POINTS


Q1 2SC1923(O) FM RF AMP
Q2 2SC1923(R) FM MIX
Q4 2SC380(O) FM IF AMP
Q3 2SC1923(R) FM OSC.
IC-1 RH-IX1083AFZZ
IC-2 RH-IX1082AFZZ
Q5 2SC380(O) AM MIX
Q6 2SC380(R) AM OSC
Q7 2SC380(O) AM IF AMP
Q8 2SC380(Y) AM IF AMP
IC-101 RH-IX1084AFZZ
IC-101 PHONO
R-CH J103-A PHONO
L-CH J103-B
ROD ANT
EXT FM ANT TB1
STEREO INDICATOR
Q101,102 2SC1682GR
Q103,104 2SC732GR
Q107, Q108 2SC732BL
Q109,110 2SC373
Q115 2SC2021(R) PHASE SHIFTER
Q112 2SC373
Q111 2SC1583(G)
Q113,114 2SC1740(R) METER AMP
Q116 2SC2021(R) PHASE SHIFTER
Q117 2SD467(C) RIPPLE FILTER
IC601,602 POWER RH-IX1020AFZZ
IC-601
IC-602
TWEETER 8ohm SP3
WOOFER 4 ohm SP1
EXT. SPEAKER SO102
HEAD PHONE J603
EXT. SPEAKER SO103
WOOFER 4ohm SP2
8ohm SP4 TWEETER
REMOTE J101-B
FADER
REC LEVEL
TREBLE
BASS
VOLUME
SO502 PG502
R-CH
L-CH
SO101 DIN REC/PB
R-CH IN MIC
R-CH EXT. MIC J101-A
L-CH EXT. MIC J101-C
L-CH IN MIC
MIX MIC JACK J401
Q401 2SC1682GR
Q402 2SC732GR
MIC AMP
SWITCH MUTING
IC701 APSS AMP RH-IX0408AGZZ
Q701,704 2SA495(Y)
Q702,703 2SC372(Y)
Q705 2SD468(C)
Q301,302 BIAS OSC 2SC458(D)
Q501,502 APSS INDICATOR 2SC458(D)
ERASE HEAD
PLUNGER
MOTOR
EXT. DC 15V
UM/SUM-1X10 BATT
J901
SO901
T901
AC240V. 50/60Hz
GF-9191E

SW. NO.	DESCRIPTION	POSITION	SW. NO.	DESCRIPTION	POSITION	SW. NO.	DESCRIPTION	POSITION	SW. NO.	DESCRIPTION	POSITION	SW. NO.	DESCRIPTION	POSITION
SW101A	LW BAND SELECTOR SWITCH	:FM	SW101E	PHONO SELECTOR SWITCH	:FM	SW103	EDITOR	:OFF	SW107	MODE SELECTOR SWITCH	:STEREO	SW501	MOTOR MAIN SWITCH	:OFF
SW101B	MW BAND SELECTOR SWITCH	:FM	SW101F	POWER SWITCH	:TAPE	SW104	MIXING SWITCH	:OFF	SW108	LOUDNESS SWITCH	:ON	SW502	APSS(FWD) SWITCH	:OFF
SW101C	SW BAND SELECTOR SWITCH	:FM	SW101G	MUTING SWITCH	:OFF	SW105	REC MODE SWITCH	:AUTO	SW109	METER SWITCH	:VU	SW503	APSS(REV) SWITCH	:OFF
SW101D	FM BAND SELECTOR SWITCH	:FM	SW102	REC/PB SWITCH	:PLAYBACK	SW106	TAPE SELECTOR SWITCH	:CrO2	SW301	BEAT CANCEL SWITCH A-B	:A	SW701	VOLTAGE SELECTOR	:220V

(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 34 SCHEMATIC DIAGRAM

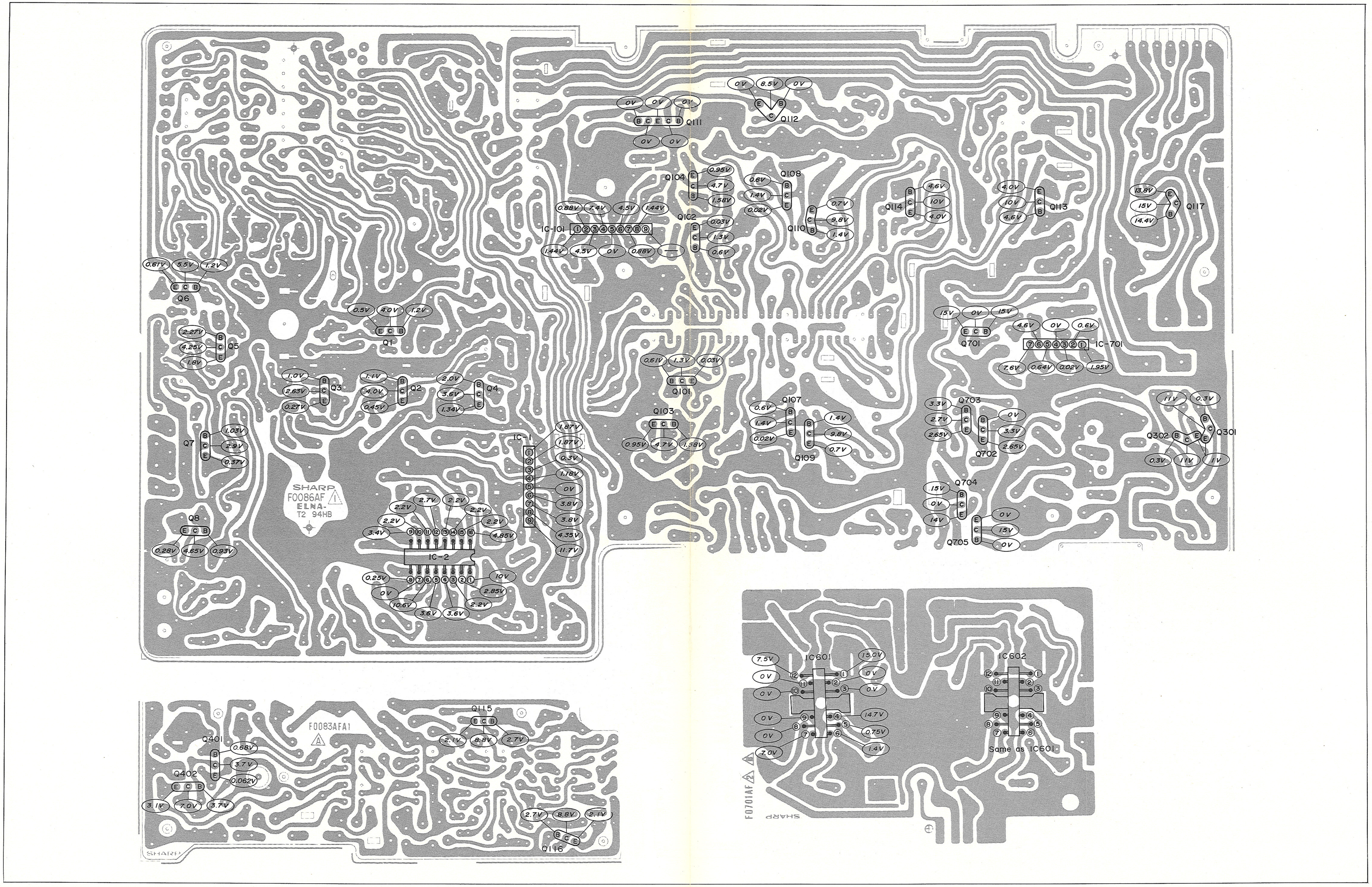

Q111 0V 0V 0V B C E C B 0V 0V
Q112 0V 8.5V 0V E B C
Q104 E C B 0.95V 4.7V 1.58V
Q108 0.6V 1.4V 0.02V B C E
Q110 E C B 0.7V 9.8V 1.4V
Q114 B C E 4.6V 10V 4.0V
Q113 4.0V 10V 4.6V E C B
Q117 13.8V 15V 14.4V E C B
IC-101 ①②③④⑤⑥⑦⑧⑨ 0.88V 7.4V 4.5V 1.44V 1.44V 4.5V 0V 0.88V —
Q102 E C B 0.03V 1.3V 0.6V
Q6 0.61V 5.5V 1.2V E C B
Q1 0.5V 4.0V 1.2V E C B
Q5 B C E 2.27V 4.25V 1.8V
Q3 1.0V 2.63V 0.27V B C E
Q2 1.1V 4.0V 0.45V B C E
Q4 2.0V 3.6V 1.34V B C E
Q7 B C E 1.03V 2.9V 0.37V
Q8 E C B 0.28V 4.65V 0.93V
IC-1 ①②③④⑤⑥⑦⑧⑨ 1.87V 1.87V 0.3V 1.18V 0V 3.8V 3.8V 4.35V 11.7V
IC-2 ⑨⑩⑪⑫⑬⑭⑮⑯ 3.4V 2.2V 2.2V 2.7V 2.2V 2.2V 2.2V 4.85V
IC-2 ⑧⑦⑥⑤④③②① 0.25V 0V 10.6V 3.6V 3.6V 2.2V 2.85V 10V
SHARP F0086AF ELNA- T2 94HB
Q101 0.61V 1.3V 0.03V B C E
Q103 E C B 0.95V 4.7V 1.58V
Q107 0.6V 1.4V 0.02V B C E
Q109 E C B 1.4V 9.8V 0.7V
Q701 15V 0V 15V E C B
IC-701 ⑦⑥⑤④③②① 4.6V 0V 0.6V 7.6V 0.64V 0.02V 1.95V
Q703 3.3V 2.7V 2.65V B C E
Q702 B C E 0V 3.3V 2.65V
Q704 15V 0V 14V B C E
Q705 E C B 0V 15V 0V
Q302 B C E 0.3V 11V
Q301 B C E 0.3V 11V 1V
Q115 E C B 2.1V 8.8V 2.7V
F0083AFA1
Q401 B C E 0.68V 3.7V 0.062V
Q402 E C B 3.1V 7.0V 3.7V
Q116 B C E 2.7V 8.8V 2.1V
SHARP
IC601 7.5V 15.0V 0V 0V 0V 0V 0V 14.7V 0V 0.75V 7.0V 1.4V
IC602 Same as IC601
F0701AF SHARP

Figure 35 VOLTAGE OF IC AND TRANSISTOR

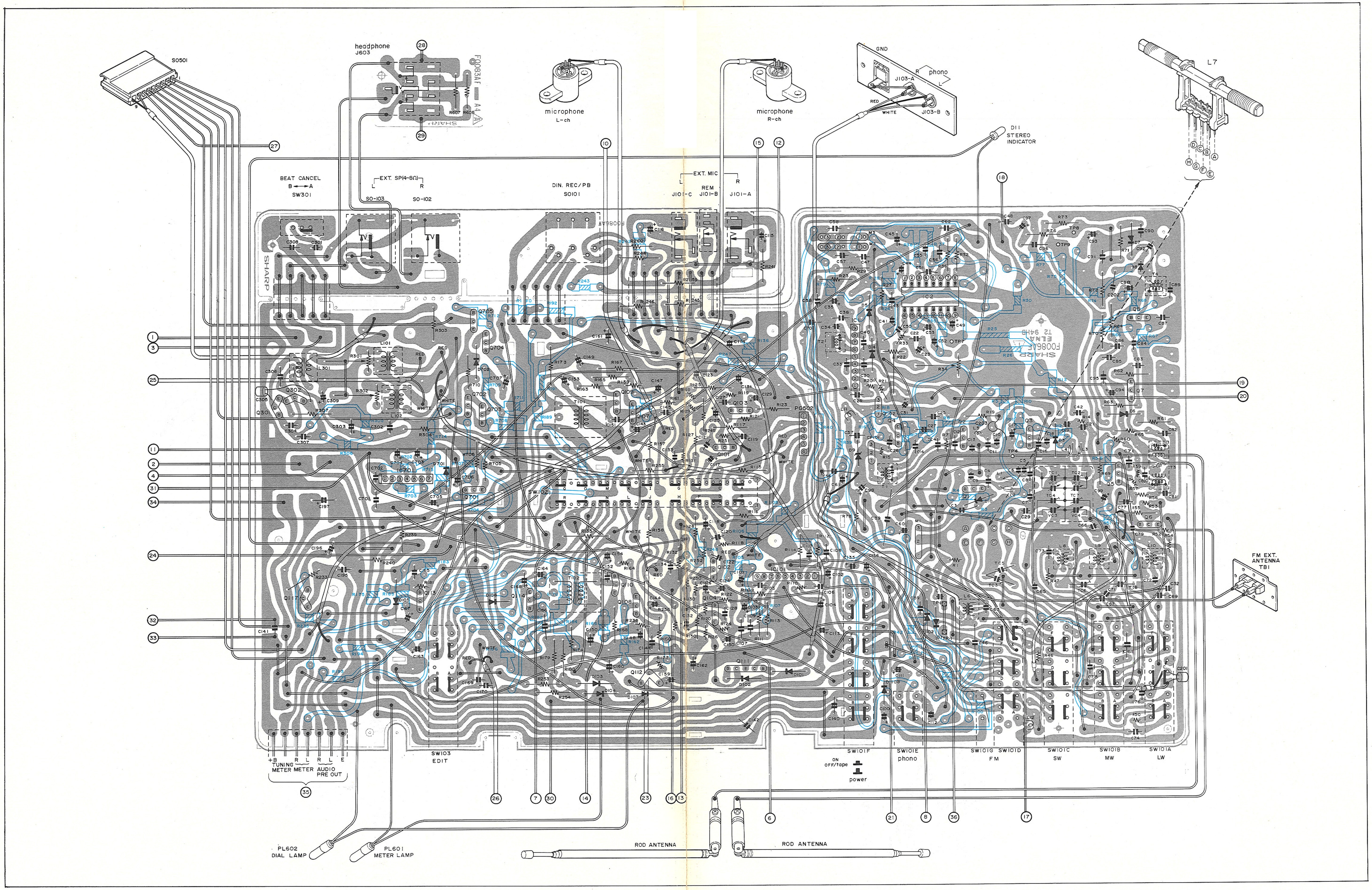

S0501
headphone
J603
microphone
L-ch
microphone
R-ch
GND
phono
J103-A
J103-B
RED
WHITE
L7
D11
STEREO
INDICATOR
BEAT CANCEL
B◄—►A
SW301
EXT. SP(4-8Ω)
L
R
SO-103
SO-102
DIN. REC/PB
SO101
EXT. MIC
L
R
J101-C
REM
J101-B
J101-A
FM EXT.
ANTENNA
TB1
+B
TUNING
METER
R
L
METER
R
L
AUDIO
PRE OUT
E
SW103
EDIT
SW101F
ON
OFF/tape
power
SW101E
phono
SW101G
SW101D
FM
SW101C
SW
SW101B
MW
SW101A
LW
PL602
DIAL LAMP
PL601
METER LAMP
ROD ANTENNA
ROD ANTENNA
SHARP

Figure 36 WIRING SIDE OF P.W. BOARD

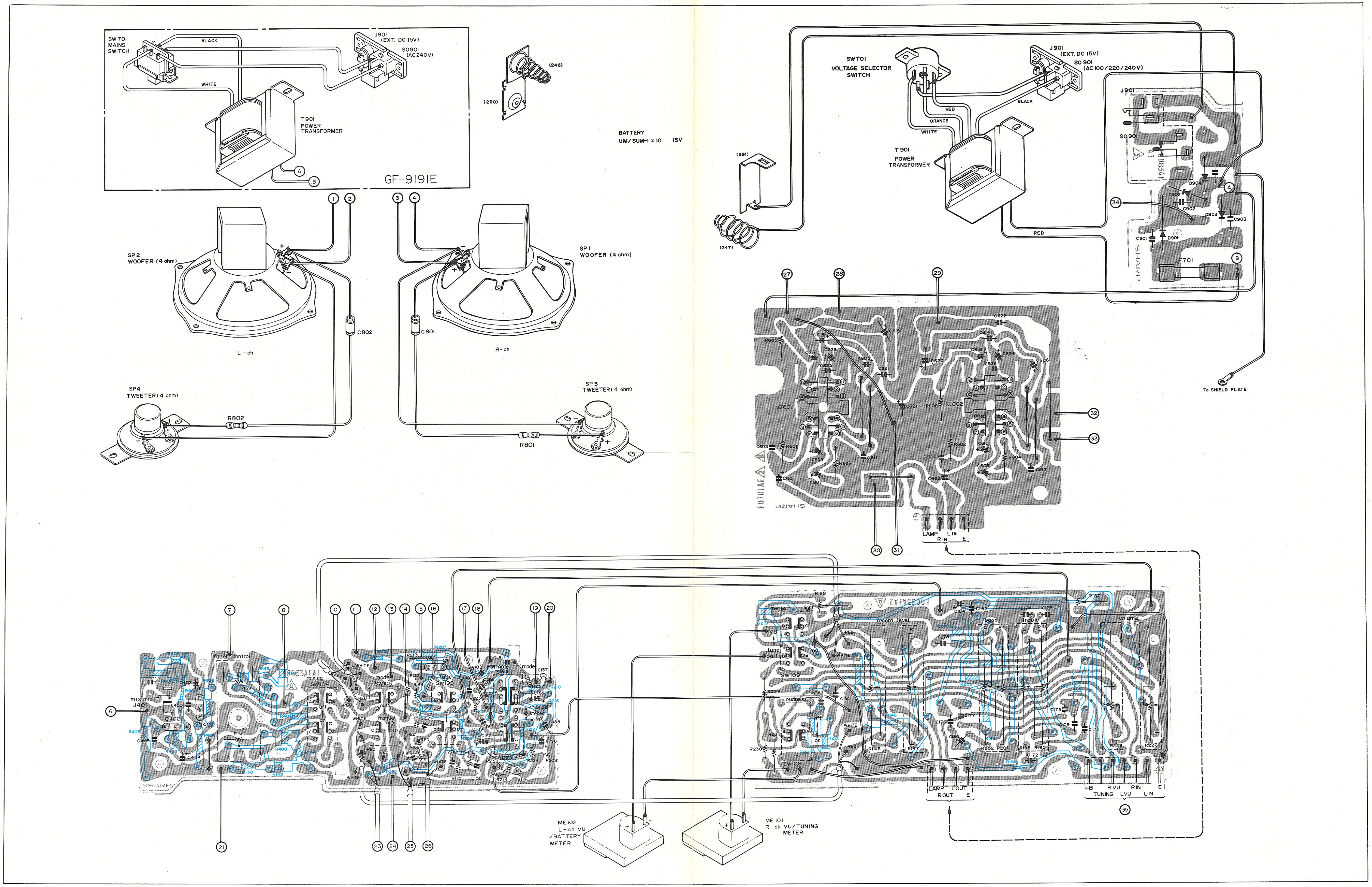

SW701 MAINS SWITCH
BLACK
WHITE
J901 (EXT. DC 15V)
S0901 (AC240V)
T901 POWER TRANSFORMER
GF-9191E
(246)
(290)
BATTERY UM/SUM-1 x 10 15V
SP2 WOOFER (4 ohm)
L-ch
C802
SP1 WOOFER (4 ohm)
R-ch
C801
SP4 TWEETER (4 ohm)
R802
SP3 TWEETER (4 ohm)
R801
SW701 VOLTAGE SELECTOR SWITCH
J901 (EXT. DC 15V)
S0 901 (AC 100/220/240V)
RED
ORANGE
WHITE
T901 POWER TRANSFORMER
(291)
(247)
S0901
F701
To SHIELD PLATE
IC601
IC602
LAMP L IN R IN E
fader control
mixing SW104
rec mode SW105
tape SW106
FM mute SW107
mode
mix mic J401
meter light
record level
bass
treble
volume
loudness
SW109
SW108
LAMP L OUT R OUT E
+B R VU R IN E TUNING L VU L IN
ME102 L-ch VU /BATTERY METER
ME101 R-ch VU/TUNING METER

Figure 37 WIRING SIDE OF P.W. BOARD

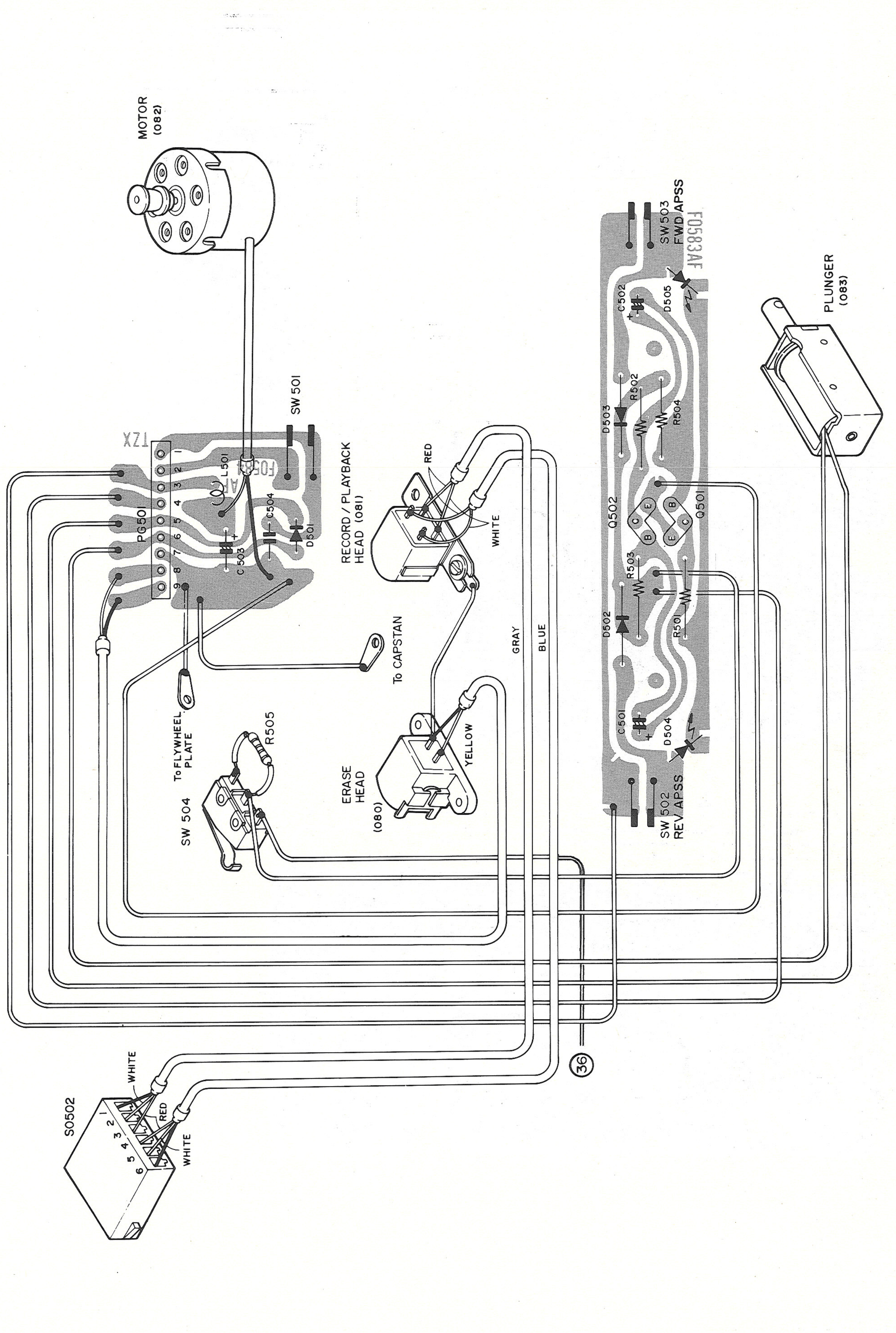

MOTOR (082)
SW 501
RECORD / PLAYBACK HEAD (081)
PLUNGER (083)
SW 503 FWD APSS
SW 502 REV APSS
ERASE HEAD (080)
SW 504
R505
To FLYWHEEL PLATE
To CAPSTAN
RED
WHITE
YELLOW
GRAY
BLUE
S0502
P650
T2X
L501
C501
C502
C503
C504
D501
D502
D503
D504
D505
R501
R502
R503
R504
Q501
Q502
F0583AF
36

Figure 38 WIRING SIDE OF P.W. BOARD

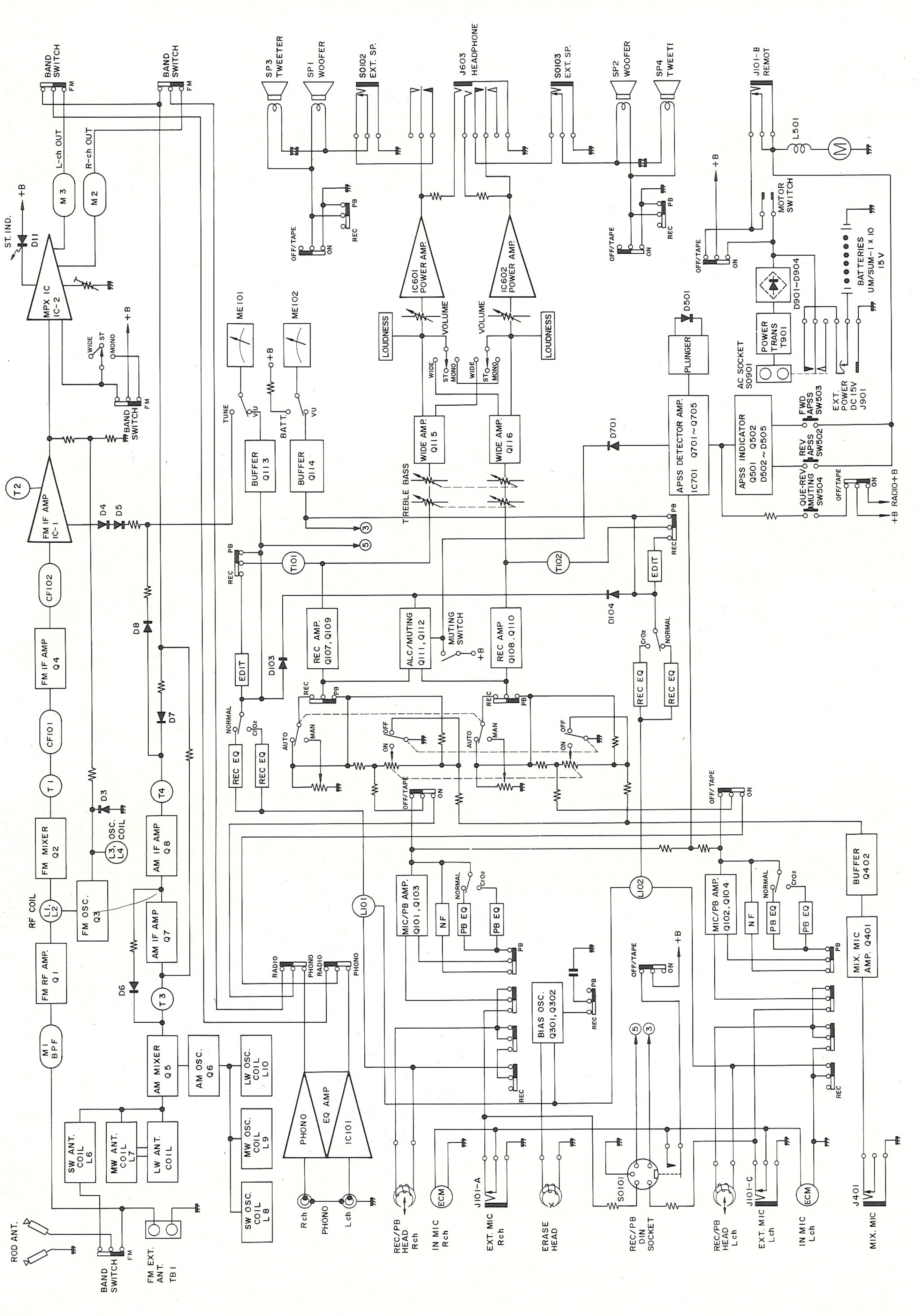

BAND SWITCH
ST. IND.
D11
MPX IC IC-2
L-ch OUT
R-ch OUT
M3
M2
FM IF AMP IC-1
FM IF AMP Q4
FM MIXER Q2
FM OSC. Q3
FM RF AMP. Q1
RF COIL L1, L2
M1 BPF
CF101
CF102
T1
T2
T3
T4
AM IF AMP Q8
AM IF AMP Q7
AM MIXER Q5
AM OSC. Q6
L3, L4 OSC. COIL
SW ANT. COIL L6
MW ANT. COIL L7
LW ANT COIL L8
LW OSC. COIL L10
MW OSC. COIL L9
SW OSC COIL L8
ROD ANT.
FM EXT. ANT. TB1
PHONO
EQ AMP IC101
ME101
ME102
TUNE
BATT
VU
BUFFER Q113
BUFFER Q114
REC AMP. Q107, Q109
ALC/MUTING Q111, Q112
MUTING SWITCH
REC AMP Q108, Q110
WIDE AMP Q115
WIDE AMP Q116
TREBLE BASS
VOLUME
LOUDNESS
IC601 POWER AMP
IC602 POWER AMP
SP3 TWEETER
SP1 WOOFER
S0102 EXT. SP.
J603 HEADPHONE
S0103 EXT. SP.
SP2 WOOFER
SP4 TWEETER
J101-B REMOT
L501
MOTOR SWITCH
PLUNGER
D501
APSS DETECTOR AMP. IC701 Q701~Q705
APSS INDICATOR Q501 Q502 D502~D505
AC SOCKET S0901
POWER TRANS T901
D901~D904
BATTERIES UM/SUM-1 x 10 15V
EXT. POWER DC 15V J901
FWD APSS SW503
REV APSS SW502
QUE-REV MUTING SW504
RADIO +B
EDIT
D701
D104
D103
REC EQ
PB EQ
NF
MIC/PB AMP. Q101, Q103
MIC/PB AMP. Q102, Q104
BIAS OSC. Q301, Q302
BUFFER Q402
MIX. MIC AMP. Q401
L101
L102
REC/PB HEAD Rch
IN MIC Rch
EXT. MIC Rch J101-A
ERASE HEAD
REC/PB DIN SOCKET S0101
REC/PB HEAD Lch
EXT. MIC Lch J101-C
IN MIC Lch
MIX. MIC J401
ECM
OFF/TAPE
ON
REC
PB
NORMAL
CrO2
AUTO
MAN
OFF
WIDE
ST
MONO
RADIO
+B

Figure 39 BLOCK DIAGRAM

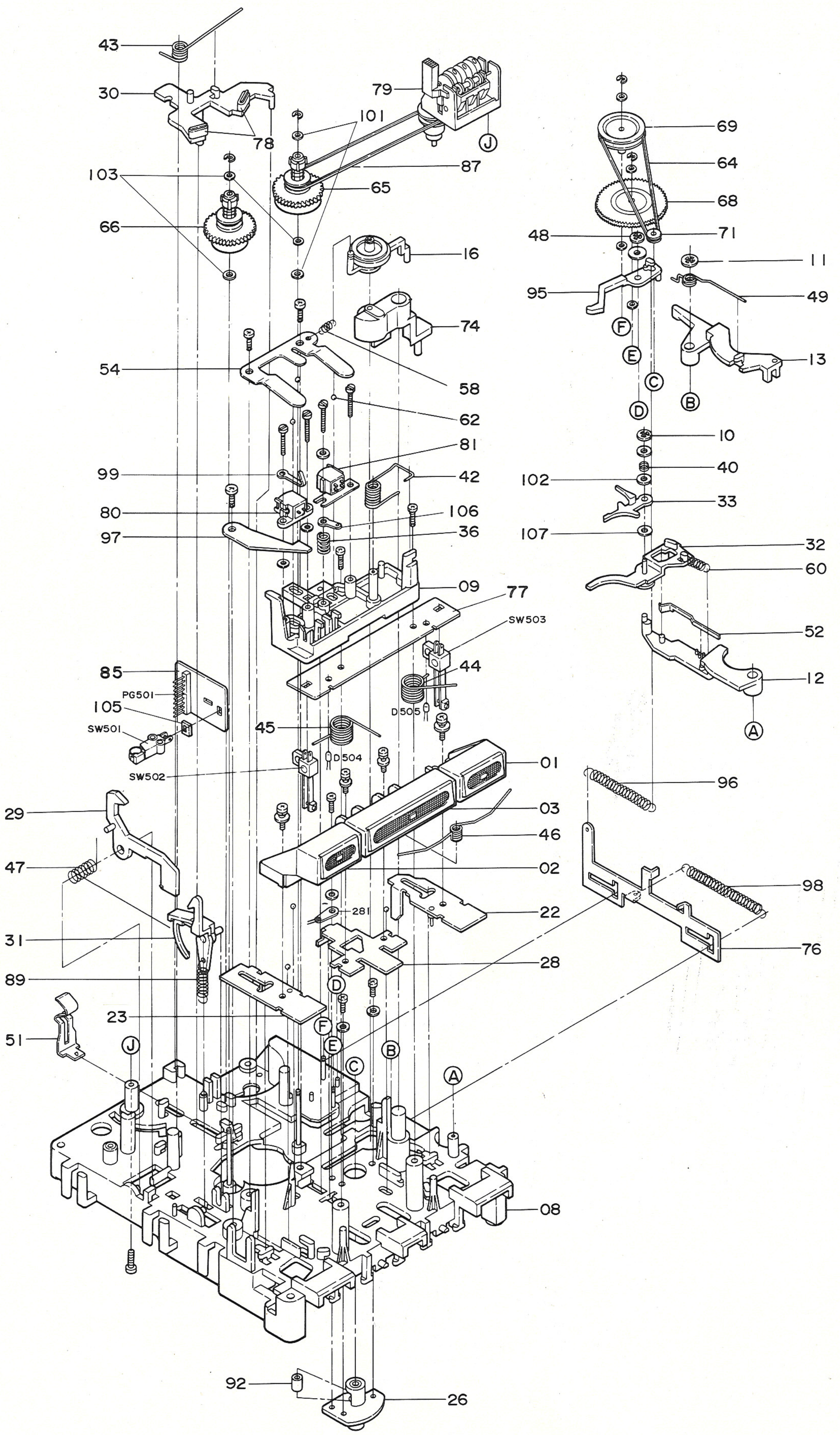

43
30
78
79
101
J
87
65
103
66
16
74
54
58
62
81
99
42
80
106
97
36
09
77
SW503
44
85
PG501
105
SW501
D505
45
D504
01
SW502
03
46
29
47
02
281
22
31
28
89
D
23
F
E
C
B
A
51
J
08
92
26
69
64
68
48
71
11
95
49
F
E
C
13
B
D
10
40
102
33
107
32
60
52
12
A
96
98
76

Figure 40 MECHANISM EXPLODED TOP VIEW

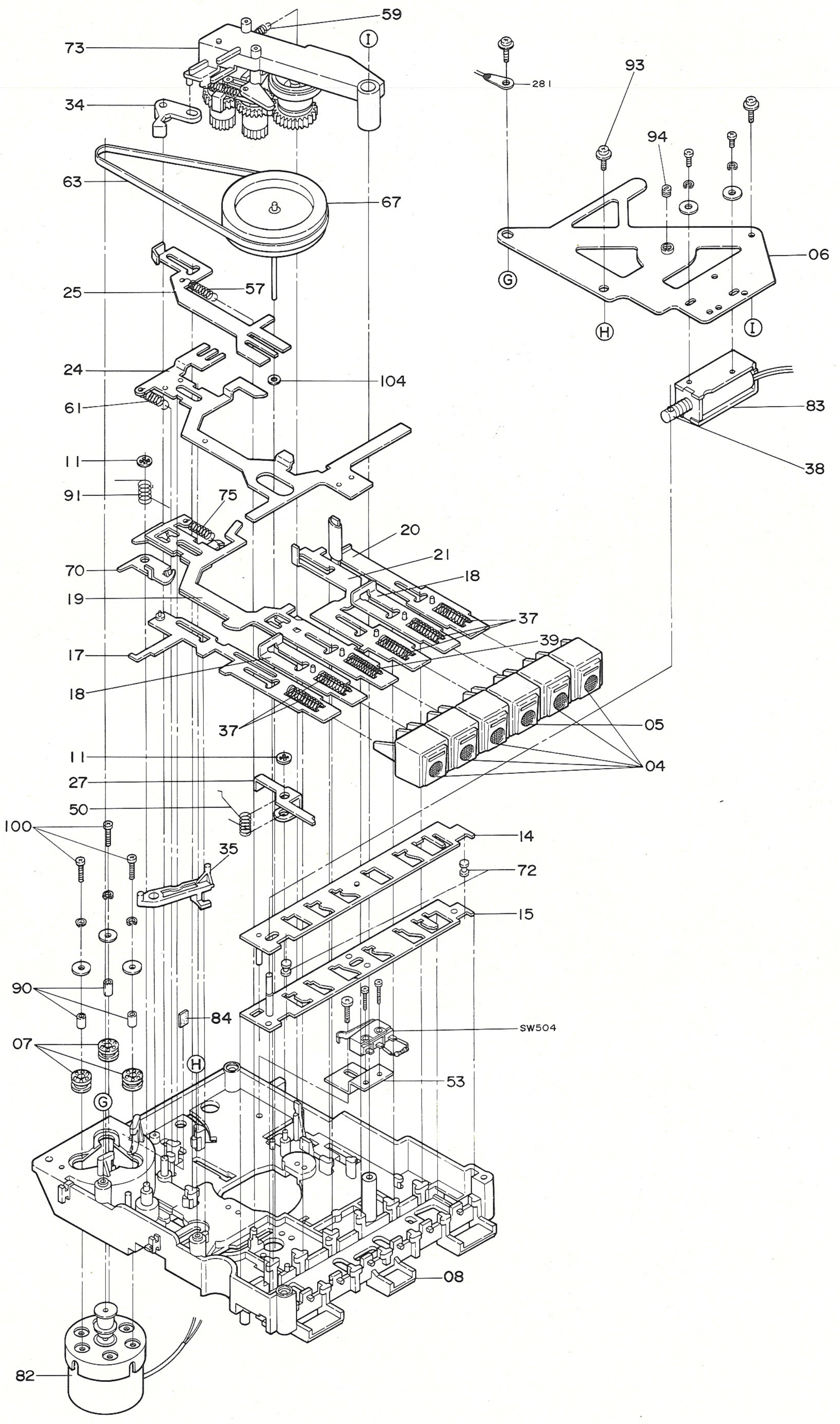

59
73
I
34
281
93
94
63
67
06
G
H
I
25
57
24
104
83
61
38
11
91
75
20
21
70
18
19
37
39
17
18
05
37
04
11
27
50
100
14
35
72
15
90
84
SW504
07
H
G
53
08
82

Figure 41 MECHANISM EXPLODED BOTTOM VIEW

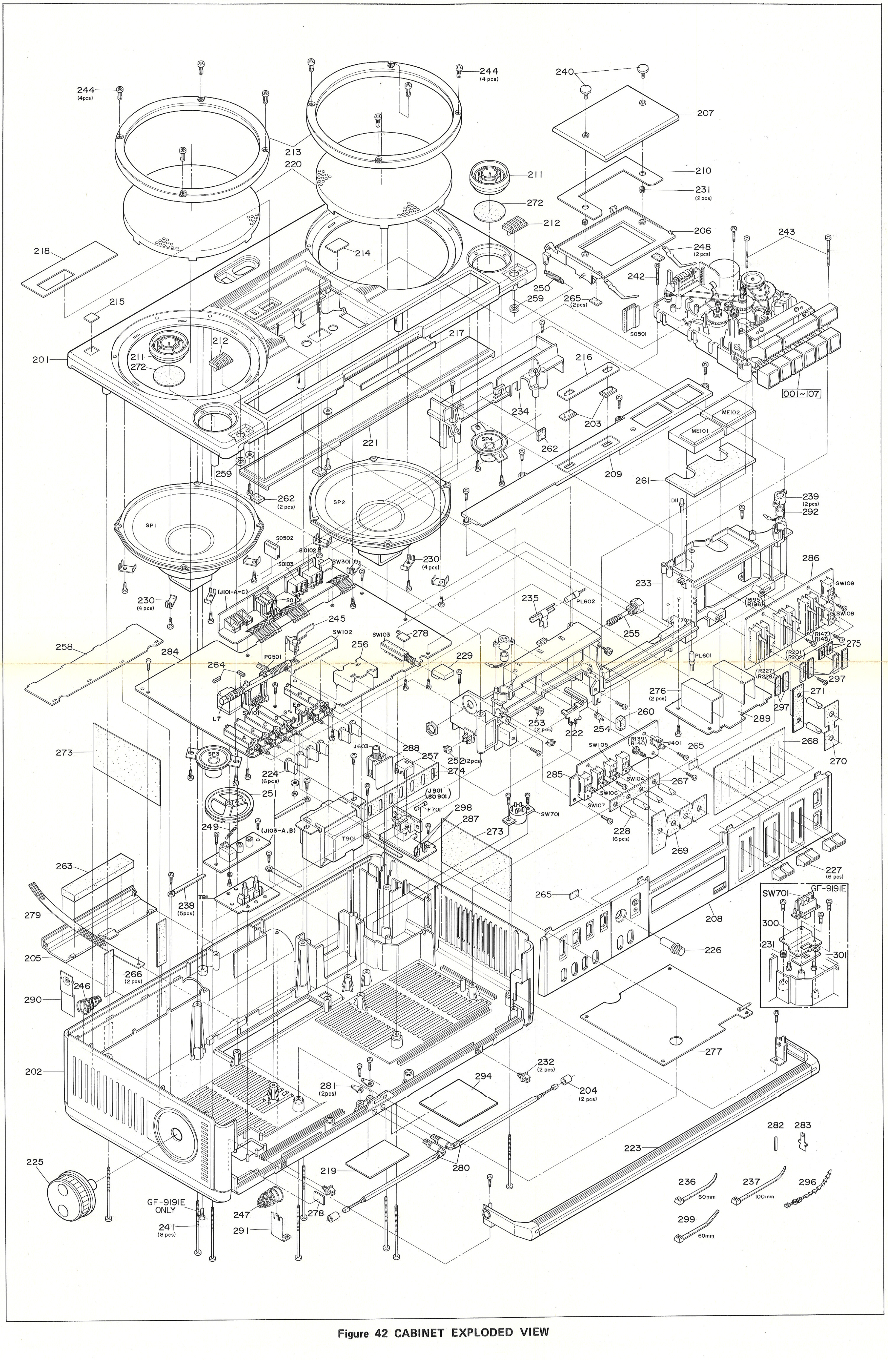

244
(4pcs)
244
(4 pcs)
213
220
240
207
210
231
(2pcs)
211
272
212
206
218
214
248
(2 pcs)
243
242
250
259
265
(2pcs)
215
S0501
201
211
272
212
217
216
234
203
001~107
ME102
ME101
221
SP4
262
209
259
262
(2 pcs)
261
239
(2pcs)
292
SP1
SP2
D11
S0502
S0102
SW301
230
(4 pcs)
286
S0103
SW109
233
S0101
(J101-A~C)
230
(4 pcs)
235
PL602
255
(R195
R196)
SW108
245
SW102
SW103
278
R147
R148
275
258
284
PG501
256
229
PL601
R201
R202
264
R227
R228
297
276
(2 pcs)
271
L7
SW101
297
253
(2 pcs)
222
254
260
289
J603
288
R139
R140
J401
265
268
270
273
SP3
257
252(2pcs)
SW105
285
224
(6pcs)
274
SW104
267
251
(J901
S0901)
SW106
F701
SW107
298
SW701
228
(6pcs)
249
(J103-A,B)
T901
287
273
269
263
TB1
238
(5pcs)
265
227
(6 pcs)
SW701
GF-9191E
279
208
300
205
226
231
301
266
(2 pcs)
290
246
277
202
232
(2 pcs)
294
281
(2pcs)
204
(2 pcs)
282
283
223
225
219
280
236
60mm
237
100mm
296
GF-9191E
ONLY
247
278
299
60mm
241
(8 pcs)
291

Figure 42 CABINET EXPLODED VIEW

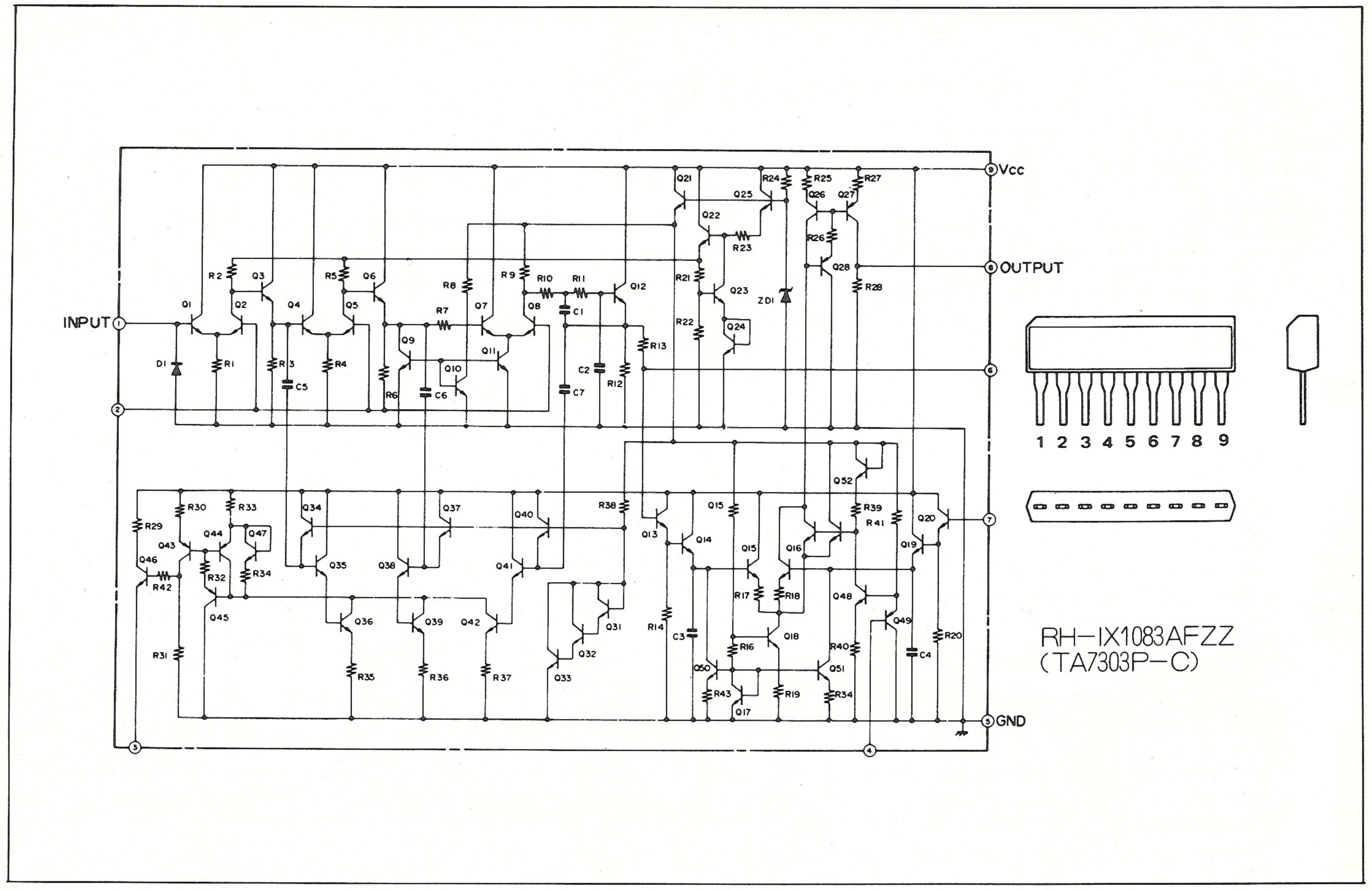

Vcc
OUTPUT
INPUT
GND
1 2 3 4 5 6 7 8 9
RH−IX1083AFZZ
(TA7303P−C)

Figure 43 EQUIVALENT CIRCUIT OF IC (IC1)

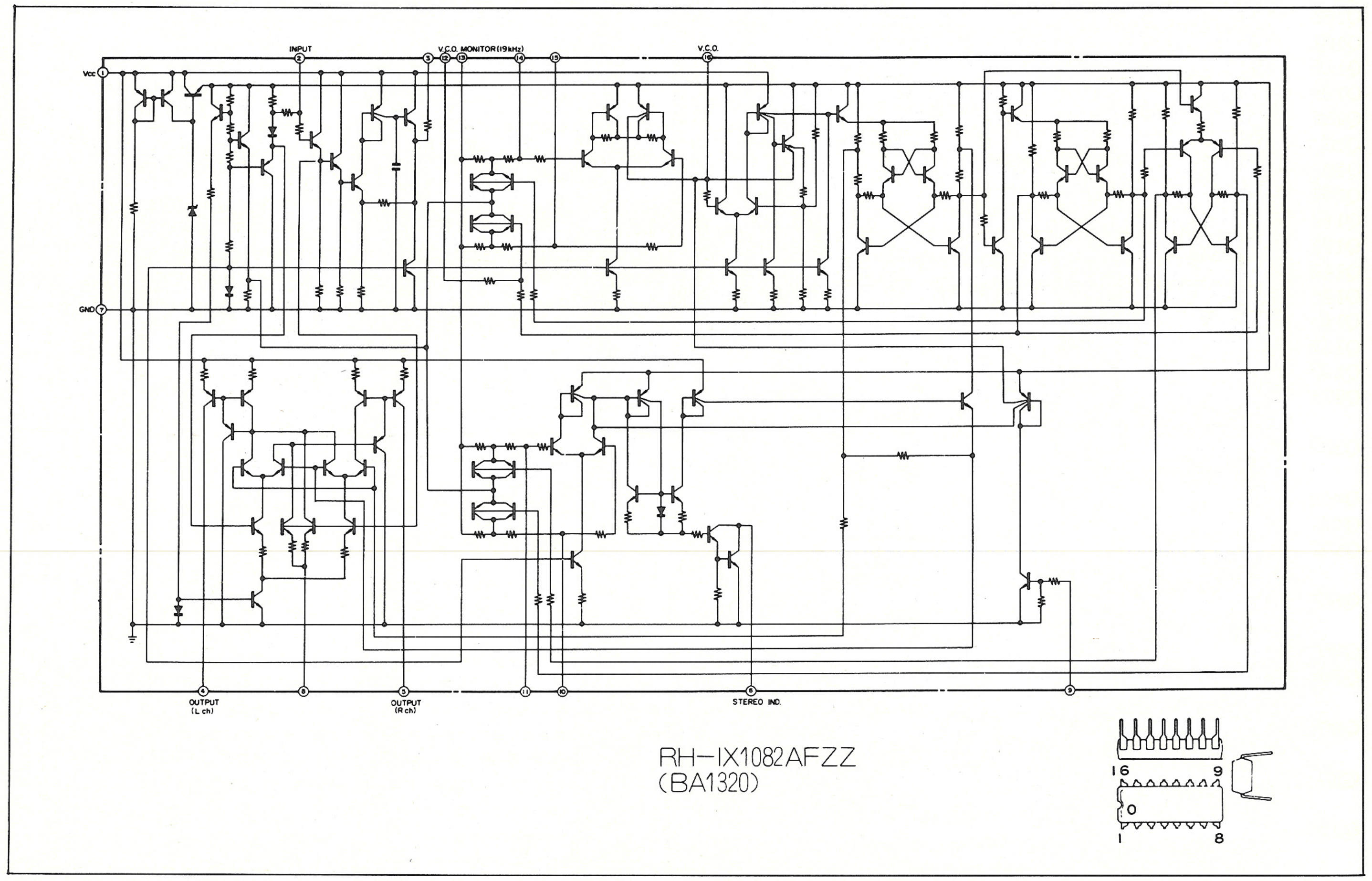

Vcc
INPUT
V.C.O. MONITOR(19kHz)
V.C.O.
GND
OUTPUT (L ch)
OUTPUT (R ch)
STEREO IND.
RH−IX1082AFZZ
(BA1320)
16
9
1
8

Figure 44 EQUIVALENT CIRCUIT OF IC (IC2)

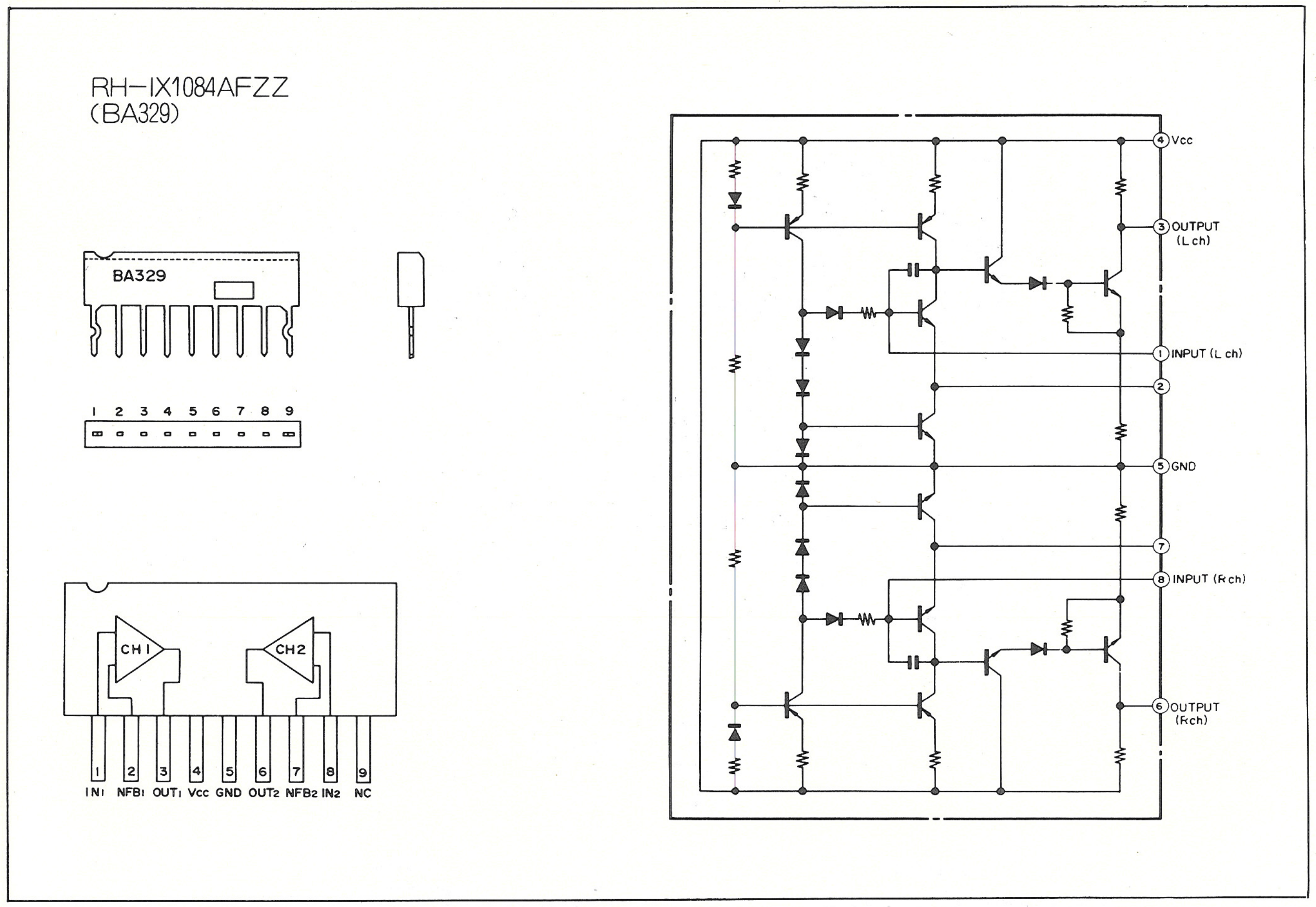

RH−IX1084AFZZ
(BA329)
BA329
1 2 3 4 5 6 7 8 9
CH1
CH2
IN1 NFB1 OUT1 Vcc GND OUT2 NFB2 IN2 NC
④Vcc
③OUTPUT (L ch)
①INPUT (L ch)
②
⑤GND
⑦
⑧INPUT (R ch)
⑥OUTPUT (R ch)

Figure 45 EQUIVALENT CIRCUIT OF IC (IC 101)

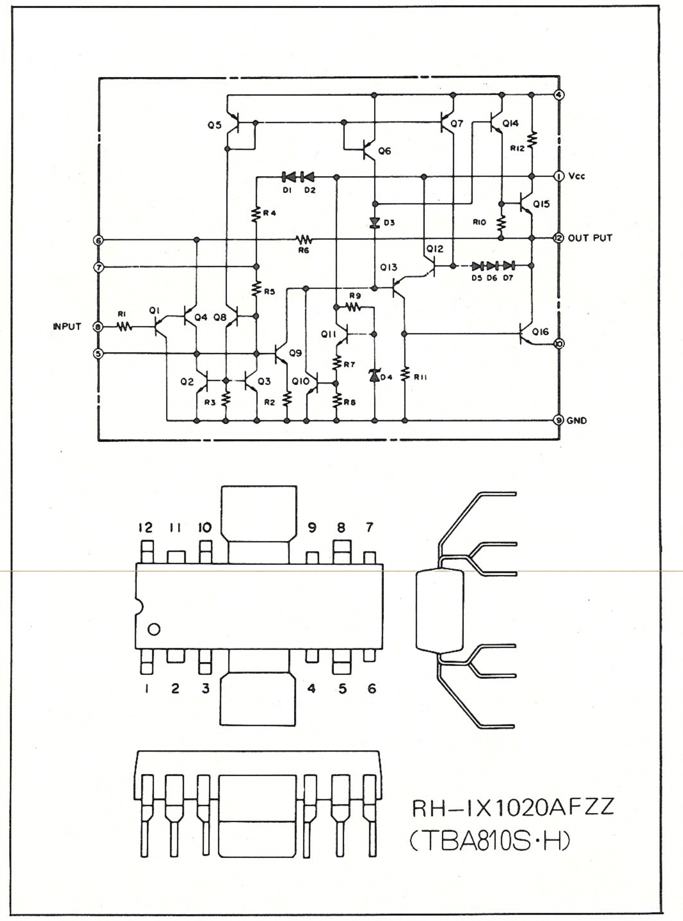

Vcc
OUT PUT
INPUT
GND
12 11 10 9 8 7
1 2 3 4 5 6
RH−IX1020AFZZ
(TBA810S·H)

Figure 46 EQUIVALENT CIRCUIT OF IC (IC601, IC602)

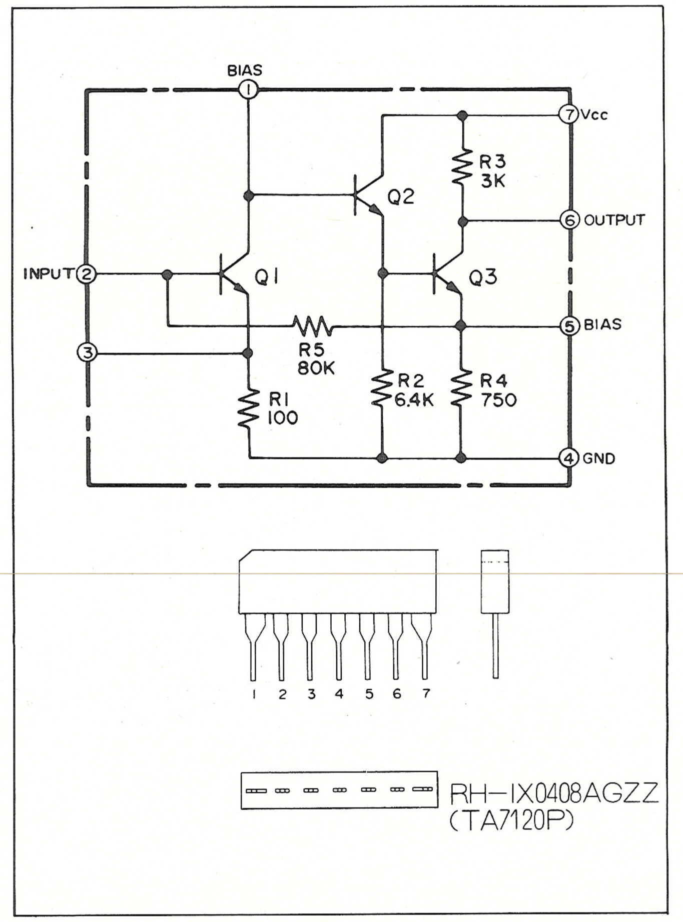

BIAS
①
⑦Vcc
R3
3K
Q2
⑥OUTPUT
INPUT②
Q1
Q3
R5
80K
⑤BIAS
③
R1
100
R2
6.4K
R4
750
④GND
1 2 3 4 5 6 7
RH−IX0408AGZZ
(TA7120P)

Figure 47 EQUIVALENT CIRCUIT OF IC (IC701)

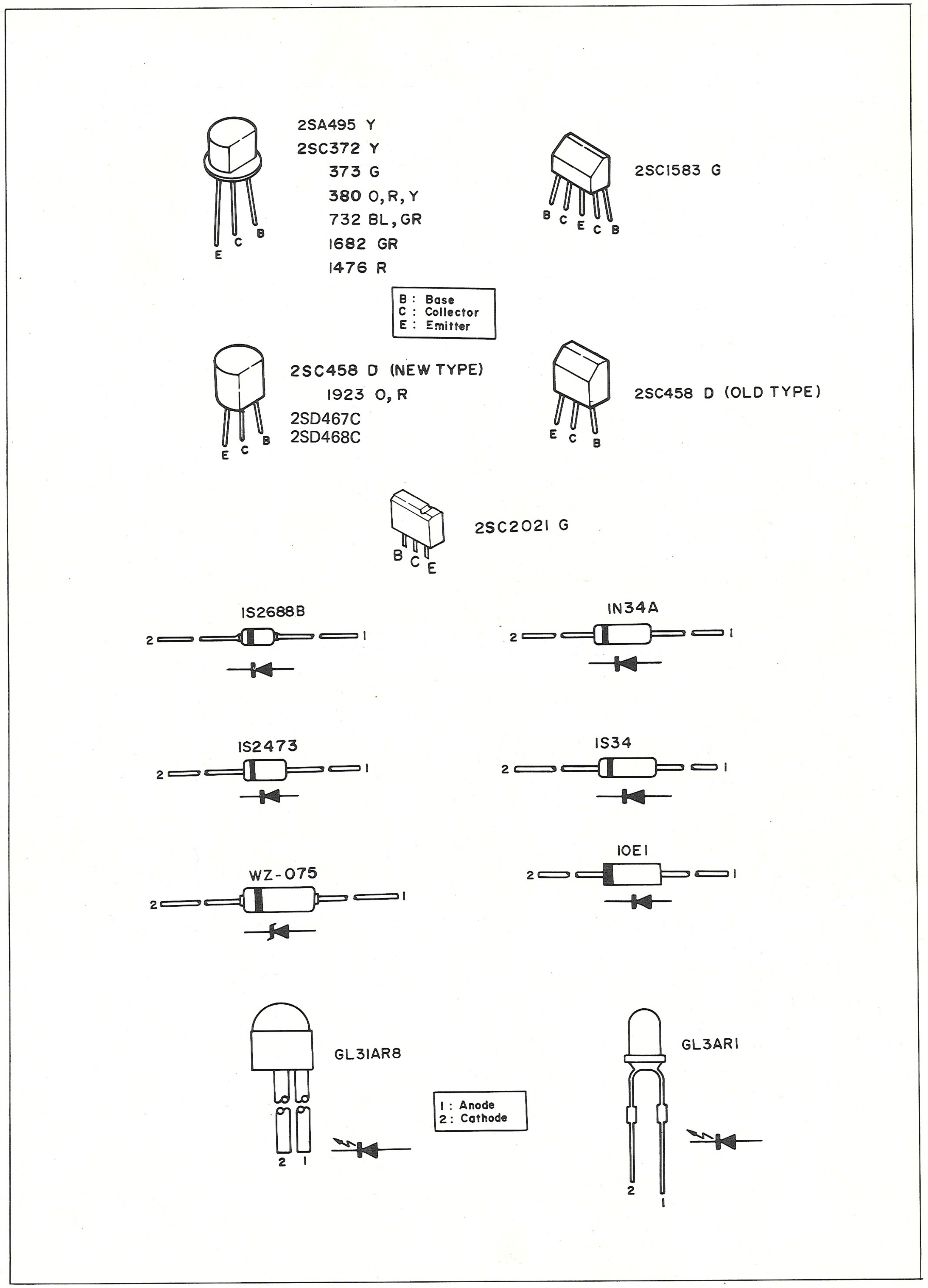


Figure 48 TRANSISTOR, DIODE AND LED

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
		INTEGRATED CIRCUITS	
IC1	RH-IX1083AFZZ	FM IF Amp. and Detector	AM
IC2	RH-IX1082AFZZ	PLL FM Stereo Demodulator	AM
IC101	RH-IX1084AFZZ	Phono Equalizer Amp.	AH
IC601	RH-IX1020AFZZ	Audio Power Amp.	AN
IC602	RH-IX1020AFZZ	Audio Power Amp.	AN
IC701	RH-IX0408AGZZ	APSS Amp.	AM
		TRANSISTORS	
Q1	VS2SC1923O/-1	FM RF Amp. (2SC1923 Ⓞ)	AC
Q2	VS2SC1923R/-1	FM Mixer (2SC1923 Ⓡ)	AC
Q3	VS2SC1923R/-1	FM Oscillator (2SC1923 Ⓡ)	AC
Q4	CS2SC380-O/-1	FM IF Amp. (2SC380 Ⓞ)	AF
Q5	VS2SC380-O/-1	AM Mixer (2SC380 Ⓞ)	AF
Q6	VS2SC380-R/-1	AM Oscillator (2SC380 Ⓡ)	AD
Q7	VS2SC380-O/-1	AM IF Amp. (2SC380 Ⓞ)	AF
Q8	VS2SC380-Y/-1	AM IF Amp. (2SC380 Ⓨ)	AD
Q101	VS2SC1682GR-1	Equalizer Amp. (2SC1682 GR)	AD
Q102	VS2SC1682GR-1	Equalizer Amp. (2SC1682 GR)	AD
Q103	VS2SC732-G/-1	Equalizer Amp. (2SC732 GR)	AD
Q104	VS2SC732-G/-1	Equalizer Amp. (2SC732 GR)	AD
Q107	VS2SC732BL/1F	Record Amp. (2SC732 BL)	AD
Q108	VS2SC732BL/1F	Record Amp. (2SC732 BL)	AD
Q109	VS2SC373-G/-1	Record Amp. (2SC373 Ⓖ)	AC
Q110	VS2SC373-G/-1	Record Amp. (2SC373 Ⓖ)	AC
Q111	VS2SC1583G-1F	ALC Amp. (2SC1583 Ⓖ)	AF
Q112	VS2SC373-G/-1	ALC Amp. (2SC373 Ⓖ)	AC
Q113	VS2SC1740R/-1	Meter Amp. (2SC1740 Ⓡ)	AC
Q114	VS2SC1740R/-1	Meter Amp. (2SC1740 Ⓡ)	AC
Q115	VS2SC2021-R-1	Phase Shifter (2SC2021 Ⓡ)	AC
Q116	VS2SC2021-R-1	Phase Shifter (2SC2021 Ⓡ)	AC
Q117	VS2SD467-C/-1	Ripple Filter (2SD467 Ⓒ)	AD
Q301	VS2SC458-D/-1	Record Bias Oscillator (2SC458 Ⓓ)	AC
Q302	VS2SC458-D/-1	Record Bias Oscillator (2SC458 Ⓓ)	AC
Q401	VS2SC1682GR-1	MIC Amp. (2SC1682 GR)	AD
Q402	VS2SC732-G/-1	MIC Amp. (2SC732 GR)	AD
Q501	VS2SC458-D/-1	APSS Indicator Switching (2SC458 Ⓓ)	AC
Q502	VS2SC458-D/-1	APSS Indicator Swithcing (2SC450 Ⓓ)	AC
Q701	VS2SA495-Y/-1	APSS Switching (2SA495 Ⓨ)	AD
Q702	VS2SC372-Y/-1	APSS Level Comparison (2SC372 Ⓨ)	AC
Q703	VS2SC372-Y/-1	APSS Level Comparison (2SC372 Ⓨ)	AC
Q704	VS2SA495-Y/-1	APSS Plunger Drive (2SA495 Ⓨ)	AD
Q705	VS2SD468-C/-1	APSS Plunger Driver (2SD468 Ⓒ)	AE

REF. NO.	PART NO.	DESCRIPTION	CODE
		DIODES	
D1	VHD1S2473//-1	Protector (1S2473)	AB
D2	VHD1S2473//-1	Protector (1S2473)	AB
D3	VHC1S2688-B1F	FM AFC (1S2688 Ⓑ)	AE
D4	VHD1N34A///-1	Tuning Meter Bias (1N34A)	AB
D5	VHD1S2473//-1	Tuning Meter Bias (1S2473)	AB
D6	VHD1N34A///-1	AM Overload (1N34A)	AB
D7	VHD1N34A///-1	AM Detector (1N34A)	AB
D8	VHD1N34A///-1	AM Tuning Detector (1N34A)	AB
D9	VHEWZ-075//-1	Zener, Voltage Regulator (WZ-075)	AD
D10	VHD1S2473//-1	Protector (1S2473)	AB
D11	VHPGL3AR1//-1	LED, Stereo Indicator (GL3AR1)	AD
D101	VHD1S34////-1	ALC (1S34BL)	AB
D102	VHD1S34////-1	ALC (1S34BL)	AB
D103	VHD1S34////-1	ALC (1S34BL)	AB
D104	VHD1S34////-1	ALC (1S34BL)	AB
D105	VHD1N34A///-1	VU Meter (1N34A)	AB
D106	VHD1N34A///-1	VU Meter (1N34A)	AB
D107	VHD1N34A///-1	ALC (1N34A)	AB
D108	VHD1S2473//-1	Muting (1S2473)	AB
D501	RH-DX1006AFZZ	Protector (10E1)	AC
D502	VHD1S2473//-1	APSS Indicator Switching (1S2473)	AB
D503	VHD1S2473//-1	APSS Indicator Switching (1S2473)	AB
D504	VHPGL31AR8/-1	LED, APSS Indicator (GL31AR8)	AE
D505	VHPGL31AR8/-1	LED, APSS Indicator (GL31AR8)	AE
D701	VHD1S2473//-1	APSS Muting (1S2473)	AB
D702	VHD1S2473//-1	APSS Muting (1S2473)	AB
D901	RH-DX1006AFZZ	Rectifier (10E1)	AC
D902	RH-DX1006AFZZ	Rectifier (10E1)	AC
D903	RH-DX1006AFZZ	Rectifier (10E1)	AC
D904	RH-DX1006AFZZ	Rectifier (10E1)	AC
		COILS	
L1	RCILR0112AFZZ	FM RF	AA
L2	RCILR0112AFZZ	FM RF	AA
L3	RCILR0089AFZZ	FM Oscillator	AA
L4	RCILR0089AFZZ	FM Oscillator	AA
L5	RCILC0030AFZZ	FM IF Trap	AC
L6	RCILA0255AFZZ	SW Antenna	AE
L7	RCILA0408AFZZ	MW/LW Antenna	AN
L8	RCILB0309AFZZ	SW Oscillator	AE
L9	RCILB0389AFZZ	MW Oscillator	AD
L10	RCILB0353AFZZ	LW Oscillator	AD
L11	RCILC0066AFZZ	Choke	AC
L12	RCILF0014AGZZ	Filter	AC
L101	RCILB0376AFZZ	Bias Step-up	AE
L102	RCILB0376AFZZ	Bias Step-up	AE

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
L301	RCILB0086AGZZ	Bias Oscillator	AE
L501	RCILF0014AGZZ	Noise Suppressor	AC

TRANSFORMERS

T1	RCILI0157AFZZ	FM IF	AE
T2	RCILI0208AFZZ	FM IF	AD
T3	RCILI0224AFZZ	AM IF	AH
T4	RCILI0170AFZZ	AM IF	AD
T101	RTRNI0065AFZZ	Recording	AF
T102	RTRNI0065AFZZ	Recording	AF
T901	RTRNP0555AFZZ	Power (GF-9191H/HB)	AW
	RTRNP0565AFZZ	Power (GF-9191E)	**

FILTERS

CF101	RFILF0009AFZZ	Ceramic, 10.7MHz, FM IF	AE
CF102	RFILF0009AFZZ	Ceramic, 10.7MHz, FM IF	AE

PACKAGED CIRCUITS

M1	RFILF0056AFZZ	B.P.F., FM Antenna	AE
M2	RMPTA0104AFZZ	Low Pass Filter	AD
M3	RMPTA0104AFZZ	Low Pass Filter	AD

CONTROLS

VC1, VC2, VC3, VC4, TC1, TC2, TC4, TC7	RVC-R0057AFZZ	Variable Capacitor, Tuning with Trimmers TC1: FM RF Trimmer T22: FM Oscillator Trimmer TC4: MW Antenna Trimmer TC7: MW Oscillator trimmer	AQ
TC3, TC5	RTO-H2050AFZZ	Trimmers, TC3: SW Antenna Trimmer TC5: LW Antenna Trimmer	AD
TC6	RTO-H1007AFZZ	Trimmer, SW Oscillator	AC
TC8	RTO-H1007AFZZ	Trimmer, LW Oscillator	AC
R22	RVR-M0130AFZZ	50K ohm (B), Muting Level Adjust	AC
R34	RVR-M0127AFZZ	10K ohm (B), PLL VCO Adjust	AC
R139/ R140	RVR-B0158AFZZ	20K ohm (B), Fader	AH
R147/ R148	RVR-Z0064AFZZ	50K ohm (A), Record Level	AM
R187	RVR-M0003SGZZ	5K ohm (B), Meter Sensitivity Adjust	AC
R188	RVR-M0003SGZZ	5K ohm (B), Meter Sensitivty Adjust	AC
R195/ R196	RVR-P0063AFZZ	100K ohm (A), Treble	AH
R201/ R202	RVR-P0063AFZZ	100K ohm (A), Bass	AH
R227/ R228	RVR-Z0063AFZZ	20K ohm (B), Volume	AM
R301	RVR-M0126AFZZ	5K ohm (B), Bias Current Adjust	AC
R302	RVR-M0126AFZZ	5K ohm (B), Bias Current Adjust	AC

CAPACITORS

REF. NO.	PART NO.	DESCRIPTION	CODE
C1	VCCSPU1HL100F	10PF, 50V, ±1PF, Ceramic	AA
C3	VCKZPU1HF102Z	.001MFD, 50V, +80 –20%, Ceramic	AA
C4	VCKZPU1HF102Z	.001MFD, 50V, +80 –20%, Ceramic	AA
C5	VCCSPU1HL5R0C	5PF, 50V, ±.25PF, Ceramic	AA
C6	VCCSPU1HL220J	22PF, 50V, ±5%, Ceramic	AA
C7	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
C8	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
C9	VCCSPU1HL5R0C	5PF, 50V, ±.25PF, Ceramic	AA
C10	VCCPU1HH1R0C	1PF (CH), 50V, ±.25PF, Ceramic	AA
C11	VCCSPU1HL101J	100PF, 50V, ±5%, Ceramic	AA
C12	VCKYPU1HB472M	.0047MFD, 50V, ±20%, Ceramic	AA
C13	VCCSPU1HL3R0C	3PF, 50V, ±.25PF, Ceramic	AA
C14	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C16	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
C17	VCEAAU1CW476Y	47MFD, 16V, +50 –10%, Electrolytic	AC
C18	VCCUPU1HJ150J	15PF (UJ), 50V, ±5%, Ceramic	AB
C19	VCCCPU1HH6R0C	6PF (CH), 50V, ±.25PF, Ceramic	AA
C21	VCCSPU1HH180J	18PF (SH), 50V, ±5%, Ceramic	**
C22	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C23	VCEALU1HW474M	.47MFD, 50V, ±20%, Electrolytic	AB
C24	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C25	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
C26	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C27	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C28	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
C29	VCCSPU1HL5R0C	5PF, 50V, ±.25PF, Ceramic	AA
C30	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C31	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C32	VCQSMT1HS151J	150PF, 50V, ±5%, Styrol	AB
C33	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C34	VCCSPU1HL100F	10PF, 50V, ±1PF, Ceramic	AA
C35	VCEAAU1CW476Y	47MFD, 16V, +50 –10%, Electrolytic	AC
C36	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
C37	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C38	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C39	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C40	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AB
C41	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%, Electrolytic	AB
C42	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C43	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C44	VCEAAU1EW335A	3.3MFD, 25V,+75 –10%, Electrolytic	AB

**; Price will be quoted upon receipt of order.

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C45	VCEAAU1CW477Y	470MFD, 16V, +50 –10%, Electrolytic	AD
C46	VCCSPU1HL181J	180PF, 50V, ±5%, Ceramic	AA
C47	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
C48	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C49	VCEALU1HW335M	3.3MFD, 50V, ±20%, Electrolytic	AC
C50	VCQSMT1HS471J	470PF, 50V, ±5%, Styrol	AB
C51	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC
C52	VCEALU1HW474M	.47MFD, 50V, ±20%, Electrolytic	AB
C53	VCEALU1HW224M	.22MFD, 50V, ±20%, Electrolytic	AB
C54	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C55	VCKYPU1HB681K	680PF, 50V, ±10%, Ceramic	AA
C56	VCKYPU1HB681K	680PF, 50V, ±10%, Ceramic	AA
C57	VCCSPU1HL331J	330PF, 50V, ±5%, Ceramic	AB
C58	VCCSPU1HL331J	330PF, 50V, ±5%, Ceramic	AB
C59	VCCSPU1HL181J	180PF, 50V, ±5%, Ceramic	AA
C60	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%, Electrolytic	AB
C61	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%, Electrolytic	AB
C62	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C63	VCCSPU1HL3R0C	3PF, 50V, ±.25PF, Ceramic	AA
C65	VCCSPU1HL390J	39PF, 50V, ±5%, Ceramic	AA
C67	VCQSMT1HS332J	3300PF, 50V, ±5%, Styrol	AB
C68	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C69	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AB
C70	VCKZPU1HF102Z	.001MFD, 50V, +80 –20%, Ceramic	AA
C71	VCCCPU1HH5R0C	5PF (CH), 50V, ±.25PF, Ceramic	AA
C72	VCCCPU1HH220J	22PF (CH), 50V, ±5%, Ceramic	AA
C73	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C74	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C75	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C76	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC
C77	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C78	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
C79	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C80	VCCSPU1HL331J	330PF, 50V, ±5%, Ceramic	AB
C81	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C82	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C83	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C84	VCKZPU1HF222Z	.0022MFD, 50V, +80 –20%, Ceramic	AA
C85	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C86	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C87	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
C88	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C89	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C90	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C91	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C92	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C93	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C94	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%, Electrolytic	AB
C95	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C96	VCQYKU1HM223K	.022MFD, 50V, ±10%, Mylar	AB
C97	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C98	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C99	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C100	VCEALU1HW105M	1MFD, 50V, ±20%, Electrolytic	AD
C101	VCEALU1EC475M	4.7MFD, 25V, ±20%, Electrolytic	AB
C102	VCEALU1EC475M	4.7MFD, 25V, ±20%, Electrolytic	AB
C103	VCEAAU1AW476Y	47MFD, 10V, +50 –10%, Electrolytic	AB
C104	VCEAAU1AW476Y	47MFD, 10V, +50 –10%, Electrolytic	AB
C105	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C106	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C107	VCQYKU1HM273K	.027MFD, 50V, ±10%, Mylar	AB
C108	VCQYKU1HM273K	.027MFD, 50V, ±10%, Mylar	AB
C109	VCQYKU1HM822K	.0082MFD, 50V, ±10%, Mylar	AB
C110	VCQYKU1HM822K	.0082MFD, 50V, ±10%, Mylar	AB
C111	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C112	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C113	RC-EZS337AF1C	330MFD, 16V, +50 –10%, Electrolytic	AC
C114	VCEAAU1AW336Y	33MFD, 10V, +50 –10%, Electrolytic	AB
C115	VCEALU1HW334M	.33MFD, 50V, ±20%, Electrolytic	AB
C116	VCEALU1HW334M	.33MFD, 50V, ±20%, Electrolytic	AB
C117	VCEALU1EC335M	3.3MFD, 25V, ±20%, Electrolytic	AB
C118	VCEALU1EC335M	3.3MFD, 25V, ±20%, Electrolytic	AB
C119	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C120	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C121	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C122	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C123	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C124	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C125	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C126	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C127	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AB
C128	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AB

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C129	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C130	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C131	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C132	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C133	VCQYKU1HM333J	.033MFD, 50V, ±5%, Mylar	AC
C134	VCQYKU1HM333J	.033MFD, 50V, ±5%, Mylar	AC
C135	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C136	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C137	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C138	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C140	VCEAAU1HW475A	4.7MFD, 50V, +75 –10%, Electrolytic	AB
C141	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C142	VCKZPU1HF333P	.033MFD, 50V, +100 –0%, Ceramic	
C143	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C144	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C145	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
C146	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
C147	VCEAAU1AW336Y	33MFD, 10V, +50 –10%, Electrolytic	AB
C148	VCEAAU1AW336Y	33MFD, 10V, +50 –10%, Electrolytic	AB
C149	VCEAAU1AW227Y	220MFD, 10V, +50 –10%, Electrolytic	AC
C150	VCEAAU1AW227Y	220MFD, 10V, +50 –10%, Electrolytic	AC
C151	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	AA
C152	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	AA
C153	VCEAAU1AW336Y	33MFD, 10V, +50 –10%, Electrolytic	AB
C154	VCEAAU1AW336Y	33MFD, 10V, +50 –10%, Electrolytic	AB
C155	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC
C156	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC
C157	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC
C158	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC
C159	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C160	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C161	RC-EZS337AF1C	330MFD, 16V, +50 –10%, Electrolytic	AC
C162	RC-EZS337AF1C	330MFD, 16V, +50 –10%, Electrolytic	AC
C163	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%, Electrolytic	AB
C164	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%, Electrolytic	AB
C165	VCCSPU1HL391J	390PF, 50V, ±5%, Ceramic	**
C166	VCCSPU1HL391J	390PF, 50V, ±5%, Ceramic	**
C167	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C168	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C169	VCQYKU1HM472M	.0047MFD, 50V, ±20%, Mylar	AB
C170	VCQYKU1HM472M	.0047MFD, 50V, ±20%, Mylar	AB
C171	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
C172	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
C173	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AB
C174	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AB
C175	VCQYKU1HM153K	.015MFD, 50V, ±10%, Mylar	AB
C176	VCQYKU1HM153K	.015MFD, 50V, ±10%, Mylar	AB
C177	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
C178	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
C179	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC
C180	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC
C181	VCCSPU1HL151J	150PF, 50V, ±5%, Ceramic	AA
C182	VCCSPU1HL151J	150PF, 50V, ±5%, Ceramic	AA
C183	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C184	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C185	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C186	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C187	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
C188	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
C189	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C190	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C193	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
C194	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
C195	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C196	VCEAAU1EW107Y	100MFD, 25V, +50 –10%, Electrolytic	AC
C197	VCEAAU1CW108Y	1000MFD, 16V, +50 –10%, Electrolytic	AE
C201	VCQYKU1HM333K	.033MFD, 50V, ±10%, Mylar	AB
C202	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C203	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C301	VCQYKU1HM273K	.027MFD, 50V, ±10%, Mylar	AB
C302	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C303	VCEAAU1CW107Y	100MFD, 16V, +50 –10%, Electrolytic	AC
C304	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AB
C305	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AB
C306	VCQYKU1HM473K	.047MFD, 50V, ±10%, Mylar	AC
C307	VCQYKU1HM153M	.015MFD, 50V, ±20%, Mylar	AB
C308	VCQYKU1HM123K	.012MFD, 50V, ±10%, Mylar	AB
C309	RC-EZS476AF1C	47MFD, 16V, +30 –10%, Electrolytic	**
C401	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
C402	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C403	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C404	VCEAAU1AW336Y	33MFD, 10V, +50 –10%, Electrolytic	AB
C405	VCEAAU1CW106Y	10MFD, 16V, +50 –10%, Electrolytic	AB
C501	VCEAAU1EW335A	3.3MFD, 25V, +75 –10%, Electrolytic	AB
C502	VCEAAU1EW335A	3.3MFD, 25V, +75 –10%, Electrolytic	AB
C503	VCEAAU1EW227Y	220MFD, 25V, +50 –10%, Electrolytic	AC

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C504	VCKYPU1HB472M	.0047MFD, 50V, ±20%, Ceramic	AA
C601, C602	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C603	VCQYKU1HM222K	.0022MFD, 50V, ±10%, Mylar	AB
C604	VCQYKU1HM222K	.0022MFD, 50V, ±10%, Mylar	AB
C605	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C606	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C607	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C608	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C609	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C610	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C611	VCQYKU1HM682M	.0068MFD, 50V, ±20%, Mylar	AB
C612	VCQYKU1HM682M	.0068MFD, 50V, ±20%, Mylar	AB
C613	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C614	VCEAAU1AW107Y	100MFD, 10V, +50 –10%, Electrolytic	AB
C617	VCEALU1HW224M	.22MFD, 50V, ±20%, Electrolytic	AB
C618	VCEALU1HW224M	.22MFD, 50V, ±20%, Electrolytic	AB
C619	VCEAAU1CW108Y	1000MFD, 16V, +50 –10%, Electrolytic	AE
C620	VCEAAU1CW108Y	1000MFD, 16V, +50 –10%, Electrolytic	AE
C621	VCQYKU1HM152K	.0015MFD, 50V, ±10%, Mylar	AB
C622	VCQYKU1HM152K	.0015MFD, 50V, ±10%, Mylar	AB
C623	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C624	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C625	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C626	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C627	VCEAAU1EW228Y	2200MFD, 25V, +50 –10%, Electrolytic	AH
C701	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C702	VCCSPU1HL101J	100PF, 50V, ±5%, Ceramic	AA
C703	VCEAAU1AW336Y	33MFD, 10V, +50 –10%, Electrolytic	AB
C704	VCEAAU1EW335A	3.3MFD, 25V, +75 –10%, Electrolytic	AB
C705	VCEAAU1HW105A	1MFD, 50V, +75 –10%, Electrolytic	AB
C706	VCEALU1HW335M	3.3MFD, 50V, ±20%, Electrolytic	AC
C707	VCEAAU1EW107Y	100MFD, 25V, +50 –10%, Electrolytic	AC
C801	VCE9AT1SD475M	4.7MFD, 30V, ±20%, Electrolytic	AD
C802	VCE9AT1SD475M	4.7MFD, 30V, ±20%, Electrolytic	AD
C901	VCKZPU1HF104Z	.1MFD, 50V, +80 –20%, Ceramic	AC
C902	VCKZPU1HF104Z	.1MFD, 50V, +80 –20%, Ceramic	AC
C903	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C904	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA

RESISTORS

(Unless otherwise specified resistors are 1/4W, ±5%, Carbon type.)

REF. NO.	PART NO.	DESCRIPTION	CODE
R1	VRD-ST2EY102J	1K ohm	AA
R7	VRD-SU2EY471J	470 ohm	AA
R14	VRD-SU2EY562J	5.6K ohm	AA
R15	VRD-SU2EY331J	330 ohm	AA
R19	VRD-ST2EE471J	470 ohm	AA
R20	VRD-SU2EY102J	1K ohm	AA
R21	VRD-SU2EY153J	15K ohm	AA
R23	VRD-ST2EE181J	180 ohm	AA
R27	VRD-ST2EE821J	820 ohm	AA
R29	VRD-ST2EE271J	270 ohm	AA
R32	VRD-ST2EE271J	270 ohm	AA
R33	VRD-SU2EY153J	15K ohm	AA
R36	VRD-ST2EE101J	100 ohm	AA
R46	VRD-SU2EY101J	100 ohm	AA
R47	VRD-SU2EY152J	1.5K ohm	AA
R50	VRD-SU2EY100J	10 ohm	AA
R52	VRD-SU2EY100J	10 ohm	AA
R53	VRD-SU2EY121J	120 ohm	AA
R54	VRD-SU2EY471J	470 ohm	AA
R55	VRD-ST2EE184J	180K ohm	AA
R56	VRD-SU2EY474J	470K ohm	AA
R57	VRD-SU2EY121J	120 ohm	AA
R59	VRD-SU2EY223J	22K ohm	AA
R60	VRD-SU2EY102J	1K ohm	AA
R61	VRD-ST2EE103J	10K ohm	AA
R62	VRD-ST2EE471J	470 ohm	AA
R63	VRD-ST2EE152J	1.5K ohm	AA
R64	VRD-ST2EE182J	1.8K ohm	AA
R65	VRD-ST2EE562J	5.6K ohm	AA
R69	VRD-ST2EE561J	560 ohm	AA
R70	VRD-ST2EE473J	47K ohm	AA
R71	VRD-ST2EE471J	470 ohm	AA
R72	VRD-ST2EE562J	5.6K ohm	AA
R73	VRD-ST2EE123J	12K ohm	AA
R76	VRD-ST2EE153J	15K ohm	AA
R78	VRD-ST2EE471J	470 ohm	AA
R109	VRD-ST2EE391J	390 ohm	AA
R110	VRD-SU2EY391J	390 ohm	AA
R111	VRD-ST2EE104J	100K ohm	AA
R112	VRD-ST2EE104J	100K ohm	AA
R113	VRD-ST2EE103J	10K ohm	AA
R114	VRD-ST2EE103J	10K ohm	AA
R115	VRD-ST2EE101J	100 ohm	AA
R116	VRD-ST2EE101J	100 ohm	AA
R117	VRD-ST2EE151J	150 ohm	AA
R118	VRD-SU2EY151J	150 ohm	AA
R119	VRD-SU2EY274J	270K ohm	AA
R120	VRD-SU2EY274J	270K ohm	AA
R121	VRD-ST2EE184J	180K ohm	AA
R122	VRD-SU2EY184J	180K ohm	AA
R123	VRD-ST2EE102J	1K ohm	AA
R124	VRD-SU2EY102J	1K ohm	AA
R125	VRD-ST2EE392J	3.9K ohm	AA
R126	VRD-SU2EY392J	3.9K ohm	AA
R127	VRD-ST2EE472J	4.7K ohm	AA
R128	VRD-ST2EE472J	4.7K ohm	AA
R129	VRD-SU2EY332J	3.3K ohm	AA
R130	VRD-ST2EE332J	3.3K ohm	AA

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R131	VRD-SU2EY683J	68K ohm	AA
R132	VRD-ST2EE683J	68K ohm	AA
R133	VRD-ST2EE682J	6.8K ohm	AA
R134	VRD-SU2EY682J	6.8K ohm	AA
R135	VRD-ST2EE561J	560 ohm	AA
R149	VRD-SU2EY822J	8.2K ohm	AA
R150	VRD-ST2EE822J	8.2K ohm	AA
R157	VRD-ST2EE102J	1K ohm	AA
R158	VRD-ST2EE102J	1K ohm	AA
R159	VRD-SU2EY470J	47 ohm	AA
R160	VRD-ST2EE470J	47 ohm	AA
R161	VRD-SU2EY153J	15K ohm	AA
R163	VRD-ST2EE223J	22K ohm	AA
R164	VRD-SU2EY223J	22K ohm	AA
R165	VRD-ST2EE473J	47K ohm	AA
R167	VRD-ST2EE101J	100 ohm	AA
R168	VRD-ST2EE101J	100 ohm	AA
R169	VRD-SU2EY393J	39K ohm	AA
R170	VRD-SU2EY393J	39K ohm	AA
R171	VRD-SU2EY563J	56K ohm	AA
R172	VRD-SU2EY563J	56K ohm	AA
R173	VRD-ST2EE102J	1K ohm	AA
R174	VRD-ST2EE102J	1K ohm	AA
R177	VRD-SU2EY153J	15K ohm	AA
R179	VRD-ST2EE332J	3.3K ohm	AA
R180	VRD-ST2EE332J	3.3K ohm	AA
R181	VRD-SU2EY473J	47K ohm	AA
R208	VRD-SU2EY561J	560 ohm	AA
R213	VRD-ST2EE474J	470K ohm	AA
R214	VRD-SU2EY474J	470K ohm	AA
R223	VRD-SU2EY562J	5.6K ohm	AA
R224	VRD-SU2EY562J	5.6K ohm	AA
R229	VRD-ST2EY473J	47K ohm	AA
R230	VRD-ST2EE472J	4.7K ohm	AA
R231	VRD-ST2EE472J	4.7K ohm	AA
R233	VRD-ST2EE121J	120 ohm	AA
R238	VRD-SU2EY473J	47K ohm	AA
R239	VRD-ST2EE681J	680 ohm	AA
R240	VRD-ST2EE222J	2.2K ohm	AA
R241	VRD-ST2EE562J	5.6K ohm	AA
R244	VRD-ST2EE222J	2.2K ohm	AA
R245	VRD-ST2EE102J	1K ohm	AA
R246	VRD-ST2EE102J	1K ohm	AA
R249	VRD-ST2EE223J	22K ohm	AA
R250	VRD-SU2EY223J	22K ohm	AA
R251	VRD-SU2EY684J	680K ohm	AA
R252	VRD-ST2EE684J	680K ohm	AA
R253	VRD-ST2EE562J	5.6K ohm	AA
R254	VRD-ST2EE562J	5.6K ohm	AA
R255	VRD-ST2EE562J	5.6K ohm	AA
R256	VRD-ST2EE562J	5.6K ohm	AA
R257	VRD-ST2EY104J	100K ohm	AA
R258	VRD-ST2EY104J	100K ohm	AA
R259	VRD-ST2EE103J	10K ohm	AA
R260	VRD-ST2EE103J	10K ohm	AA
R303	VRD-ST2EE1R0J	1 ohm	AA
R304	VRS-PT3AB101K	100 ohm, 1W, ±10%, Oxide Film	**
R307	VRD-ST2EE220J	22 ohm	AA
R501	VRD-ST2EY561J	560 ohm	AA
R502	VRD-ST2EY472J	4.7K ohm	AA
R503	VRD-ST2EY274J	270K ohm	AA
R504	VRD-ST2EY683J	68K ohm	AA
R505	VRD-ST2EY103J	10K ohm	AA
R601	VRD-ST2EE104J	100K ohm	AA
R602	VRD-ST2EE104J	100K ohm	AA
R603	VRD-ST2EE390J	39 ohm	AA
R604	VRD-ST2EE390J	39 ohm	AA
R605	VRD-ST2BB2R2J	2.2 ohm, 1/8W, ±5%, Carbon	AA
R606	VRD-ST2BB2R2J	2.2 ohm, 1/8W, ±5%, Carbon	AA
R607	VRD-ST2EY221J	220 ohm	AA
R608	VRD-ST2EY221J	220 ohm	AA
R705	VRD-ST2EE330J	33 ohm	AA
R706	VRD-ST2EE822J	8.2K ohm	AA
R710	VRD-ST2EE561J	560 ohm	AA
R801	VRD-ST2EE3R9J	3.9 ohm	AA
R802	VRD-ST2EE3R9J	3.9 ohm	AA

MECHANICAL PARTS

REF. NO.	PART NO.	DESCRIPTION	CODE
01	JKNBB0064AFSA	Knob, Forward APSS	AE
02	JKNBB0065AFSA	Knob, Reverse APSS	AE
03	JKNBB0063AFSA	Knob, Stop	AG
04	JKNBM0255AFSA	Knob, Eject/REW/Play/FF/Pause	AE
05	JKNBM0256AFSA	Knob, Record	AE
06	LANGT0514AFZZ	Bracket, Flywheel	AF
07	LBSHS0001AG00	Bushing, Motor	AA
08	LCHSM0228AFZZ	Main Chassis Assembly	–
09	LCHSS0107AF00	Sub Chassis Assembly	–
10	LSTWC2403AFZZ	Stop Washer, $\phi 2.4$	–
11	LSTWC3002AFZZ	Stop Washer, $\phi 3$	–
12	MARMP0001AFZZ	Arm, Auto Stop	AC
13	MARMP0002AFZZ	Arm, Auto Stop Lock Reset	AC
14	MLEVF0547AFZZ	Lever, Main Lock Plate	AD
15	MLEVF0548AFZZ	Lever, APSS Lock Plate	AD
16	MLEVF0549AFZZ	Idler, Take-up	AG
17	MLEVF0550AFFW	Lever, Pause	AD
18	MLEVF0551AFFW	Lever, Fast Forward/Rewind	AD
19	MLEVF0643AFZZ	Lever, Play	AG
20	MLEVF0553AFFW	Lever, Eject	AD
21	MLEVF0702AFZZ	Lever, Record	**
22	MLEVF0555AFZZ	Lever, Forward APSS	AD
23	MLEVF0556AFZZ	Lever, Reverse APSS	AD
24	MLEVF0557AFFW	Lever, Fast Forward/Rewind	AE
25	MLEVF0558AFFW	Lever, Fast Forward	AD
26	NBRGC0054AFZZ	Bearing, Flywheel Shaft	AG
27	MLEVF0560AFFW	Lever, Record Mistake Proof	AC
28	MLEVF0564AFFW	Lever, Stop	AC
29	MLEVP0057AF00	Lever, Erase Proof	AC
30	MLEVP0058AFZZ	Lever, Brake	AC
31	MLEVP0077AFZZ	Lever, Cassette Lock	AC
32	MLEVP0060AFZZ	Lever, Auto Stop	AC
33	MLEVP0061AFZZ	Lever, Tape End Detect	AB
34	MLEVP0062AFZZ	Lever, Fast Forward	AB
35	MLEVP0063AFZZ	Lever, Sub Chassis Return	AC
36	MSPRC0031AGMN	Spring, REC/P.B. Head Adjust	AA
37	MSPRC0139AFFJ	Spring, Eject/REW/REC/FF/Pause	AA
38	MSPRC0109AFFJ	Spring, Plunger	AA
39	MSPRC0110AFFJ	Spring, Play Lever	AA
40	MSPRC0111AFFJ	Spring, Detect Lever	AA
42	MSPRD0107AFFJ	Spring, Pinch Roller	AB
43	MSPRD0108AFFJ	Spring, Brake Lever	AA
44	MSPRD0109AFFJ	Spring, Forward APSS Lever	AA
45	MSPRD0110AFFJ	Spring, Reverse APSS Lever	AA
46	MSPRD0111AFFJ	Spring, Stop Lever	AB
47	MSPRD0112AFFJ	Spring, Erase Proof Lever	AA
48	LSTWC2001AFZZ	Stop Washer, $\phi 2$	–
49	MSPRD0116AFFJ	Spring, Auto Stop Lock Reset Arm	AB

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
50	MSPRD0117AFFJ	Spring, Record Mistake Proof	AA
51	MSPRP0133AFFW	Spring (Plate Type), Cassette Retaining	**
52	MSPRP0113AFFJ	Spring (Plate Type), Auto Stop Arm	AB
53	LANGF0393AFFW	Bracket, Muting Switch	AC
54	MSPRP0115AFFW	Spring (Plate Type), Sub Chassis Stopper	AC
57	MSPRT0335AFFJ	Spring, Fast Forward Lever	AA
58	MSPRT0332AFFJ	Spring, Idler	AA
59	MSPRT0333AFFJ	Spring, Roller Assembly	AA
60	MSPRT0334AFFJ	Spring, Auto Stop Lever	AA
61	MSPRT0331AFFJ	Spring, Fast Forward/Rewind Lever	AA
62	NBALS0004AGFJ	Ball, $\phi 3$	AA
63	NBLTH0051AF00	Belt, Motor	AD
64	NBLTK0053AF00	Belt, Auto Stop	AC
65	NDAIR0110AFSA	Turntable, Take-up	AG
66	NDAIR0129AFSA	Turntable, Supply	AE
67	NFLYC0053AFZZ	Flywheel	AH
68	NGERH0050AFZZ	Gear, Slip Roller	AC
69	NGERP0050AFZZ	Slip Roller	AC
70	MLEVF0617AFZZ	Lever, Quick Stop	AB
71	NPLYR0052AFZZ	Pulley, Auto Stop	AB
72	NROLM0051AFFW	Roller, Lock Plate	AA
73	NROLV0004AFZZ	Roller Assembly	AQ
74	NROLY0004AFZZ	Pinch Roller	AF
75	MSPRT0330AFFJ	Spring, Play Lever	AA
76	MLEVF0618AFZZ	Lever, Pause Mistake Proof	AC
77	QPWBF0583AFZZ	P.W. Board, APSS (Board only, Not Available)	–
78	PCUSG0026AG00	Rubber, Brake Lever	AB
79	KCOUB0061AFZZ	Counter, Tape	AM
80	RHEDA0059AFZZ	Head, Erase	AK
81	RHEDH0052AFZZ	Head, Record/Playback	AW
82	RMOTM0084AFZZ	Motor with Pulley	AX
83	RPLU-0053AFZZ	Plunger	AM
84	PZETF0123AFZZ	Stopper	AA
85	QPWBF0584AFZZ	P.W. Board, Motor (Board only, Not Available)	–
87	NBLTK0105AFZZ	Belt, Counter	AC
89	MSPRT0151AGFJ	Spring, Cassette Lock Lever	AA
90	PSPAA0001AGFJ	Spacer, Motor Bushing	AB
91	MSPRD0137AFFJ	Spring, Quick Stop Lever	AA
92	NPLYR0050AFZZ	Pulley, Take-up	AB
93	LX-HZ0056AFFD	Screw, Flywheel Bracket	–
94	LX-BZ0107AGZZ	Screw, Flywheel Thrust Adjust	AB
95	MLEVP0076AFZZ	Lever, Pause Mistake Proof	AC
96	MSPRT0390AFFJ	Spring, Pause Mistake Proof Lever	AB
97	LANGF0376AFFW	Plate, Sub Chassis Stopper	AB
98	MSPRT0389AFFJ	Spring, Pause Mistake Proof Lever	AA
99	LHLDW3007AGFD	Wire Holder	AA
100	LX-BZ0148AGFD	Screw, Motor	AA
101	LX-WZ5013AGZZ	Washer, Turntable	AA
102	LX-WZ5015AGZZ	Washer, Tape End Detect Lever	AA
103	LX-WZ5018AGZZ	Washer, Turntable	AA
104	LX-WZ5037AGZZ	Washer, Flywheel	AA
105	LX-WZ7050AFZZ	Spacer, Motor Switch	AA
106	QHWS-2222AGFN	Lug Terminal, Ground	–
107	PFLT-0313AF00	Felt, Tape End Detect Lever	AA

REF. NO.	PART NO.	DESCRIPTION	CODE
		MISCELLANEOUS	
201	GCABA1469AFSA	Cabinet, Front (GF-9191H/E)	AW
	GCABA1469AFSB	Cabinet, Front (GF-9191HB)	**
202	GCABB1469AFSA	Cabinet, Back	AY
203	GCOVA1101AFSA	Cover, APSS Indicator (LED)	AC
204	GCOVH1162AF00	Cover, Rod Antenna	AA
205	GFTAB1104AFSA	Lid, Battery Compartment	AE
206	GFTAC1076AFSA	Holder, Cassette	AG
207	GFTAC1077AFSA	Cover, Cassette Holder	AF
208	GWAKP9009AFSA	Plate, Operation (GF-9191H/E)	AT
	GWAKP9009AFSB	Plate, Operation (GF-9191HB)	AT
209	HDALP0399AFSA	Plate, Dial Scale	**
210	HDECB0069AFSA	Decoration Plate, Cassette Holder	AD
211	HDECC0052AFSA	Grille, Tweeter	AF
212	HDECC0053AFSA	Grille, Built-in Microphone	AD
213	HDECQ0078AFSA	Decoration Ring, Woofer	**
214	TLABZ0105AFZZ	Reflector	–
215	HINDM1133AFSB	Emblem, SHARP	AA
216	HINDM1195AFSA	Indication Plate, APSS	AD
217	HINDM1196AFSA	Indication Plate, Mechanism (GF-9191H/E)	AB
	HINDM1196AFSB	Indication Plate, Mechanism (GF-9191HB)	AB
218	HINDM1245AFSA	Indication Plate, Model	**
219	HINDM1244AFSA	Indication Plate, Model Spec. (GF-9191H)	AC
	HINDM1247AFSA	Indication Plate, Model Spec. (GF-9191HB)	AC
	HINDM1250AFSA	Indication Plate, Model Spec. (GF-9191E)	**
220	HPNC-0111AFSA	Punching Metal, Woofer	AL
221	HPNLD1171AFSA	Plate, Transparent	AH
222	HSSND0233AFSA	Dial Pointer	AD
223	JHNDG1061AFSA	Handle	**
224	JKNBM0254AFSA	Knob, Push Switch	AE
225	JKNBN0309AFSA	Knob, Tuning	AC
226	JKNBN0331AFSA	Knob, Fader Control	AE
227	JKNBP0080AFSA	Knob, Volume/Treble/Bass/ Record Level	AE
228	JKNBZ0109AFSA	Knob, Lever Switch	AB
229	JKNBZ0127AFSB	Knob, Editor Switch	AF
230	LANGS0014AGFP	Bracket, Speaker Fixing	AA
231	LBOSD0050AFFW	Boss, Inserting	AB
232	LHLDA1052AFSA	Holder, Rod Antenna	AA
233	LHLDF1205AFZZ	Frame, PWB	AP
234	LHLDF1206AFZZ	Frame, Jack Plate	AG
235	LHLDP3061AFFN	Holder, Lamp	AC
236	LHLDW1067AFZZ	Band, Wire	AA
237	LHLDW1068AFZZ	Band, Wire	AA
238	LHLDW9003CEZZ	Holder, Wire	AA
239	LHLDZ8055AFZZ	Holder, Built-in Microphone	AB
240	LX-BZ0258AFSA	Screw, Cassette Holder Cover	AF
241	LX-CZ0002AFZZ	Screw, Front Cabinet Fixing	–
242	LX-HZ0057AFFD	Screw, Mechanism Block Fixing	–
243	LX-HZ0058AFFD	Screw, Mechanism Block Fixing	–
244	LX-LZ0060AFSA	Decoration Rivet, Woofer	–
245	MLEVF0701AFZZ	Lever, REC/PB Switch	AE
246	MSPRC0021AFFN	Spring, Battery (–)	AA
247	MSPRC0140AFFN	Spring, Battery (–)	AB
248	MSPRP0089AGFW	Spring (Plate Type), Cassette Holder	AB
249	MSPRT0003AGFW	Spring, Dial Cord	AA
250	MSPRT0536AFFJ	Spring, Cassette Holder	AB

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
251	NDRM-0046AFZZ	Drum, Dial Cord	AC
252	NPLYB0050AFZZ	Pulley, Dial Cord	AA
253	NPLYB0051AFZZ	Pulley, Dial Cord	AA
254	NPLYC0102AFFW	Pulley, Dial Cord	AB
255	NSFTD0166AFFW	Shaft, Dial Cord Drive	AE
256	PCOVP7163AFZZ	Cover, Push Switch	AB
257	PCOVW1100AFZZ	Cover, AC Socket	AA
258	PCOVZ7050AF00	Cover, Battery Compartment	AC
259	PCUSG0084AF00	Cushion, Built-in Microphone	AA
260	PCUSG0085AF00	Cushion, PWB	AA
261	PCUSS0101AF00	Cushion, Meter	AA
262	PCUSS0107AF00	Cushion, Front Cabinet and Jack Plate Frame	AA
263	PCUSU0092AG00	Cushion, Battery Compartment Lid	AA
264	PCUSU0128AFZZ	Cushion, Coil	AA
265	PFLT-0095AG00	Felt, Cassette Holder and Operation Plate	AA
266	PFLT-0127AF00	Felt, Battery Compartment	AA
267	PFLT-0324AF00	Felt, 4 Switches (Lower)	AA
268	PFLT-0332AF00	Felt, VR	AA
269	PFLT-0333AF00	Felt, 4 Switches (Upper)	AD
270	PFLT-0334AF00	Felt, 2 Switches (Upper)	AB
271	PFLT-0335AF00	Felt, 2 Switches (Lower)	AA
272	PFLT-0336AF00	Felt, Tweeter	AA
273	PFLT-0337AF00	Felt, Back Cabinet	AA
274	PFLT-0341AF00	Felt, Push Switch	AA
275	PGUMS0114AF00	Conductive Rubber, Record Level Control	AB
276	PRDAR0160AFFW	Heat Sink	AB
277	PSLDM3139AFZZ	Shield Plate	AC
278	PSPAI0127AFZZ	Spacer	AA
279	PTPEC0005AG00	Ribbon, Battery Removal	AA
280	QANTR0107AFZZ	Rod Antenna	AP
281	QHWS-3001AGFN	Lug Terminal	–
282	QLUGP0111CEFW	Lug Terminal	AA
283	QLUGP0150AFZZ	Lug Terminal	AA
284	QPRBF0086AFZZ	P.W. Board, Main (Board only, Not Available)	–
285	QPRBF0083AFA1	P.W. Board, Switch (Board only, Not Available)	–
286	QPRBF0083AFA2	P.W. Board, Variable Resistor (Board only, Not Available)	–
287	QPRBF0083AFA3	P.W. Board, Power Supply (Board only, Not Available)	–
288	QPRBF0083AFA4	P.W. Board, Headphone (Board only, Not Available)	–
289	QPWBF0701AFA1	P.W. Board, AF Power (Board only, Not Available)	–
290	QTANB9102AFFN	Terminal, Battery (+)	AC
291	QTANB9103AFFN	Terminal, Battery (+)	AC
292	RMICC0057AFZZ	Built-in Microphone	AK
294	HINDM1246AFSA	Indication Plate, Voltage Selector (GF-9191H/HB)	AD
	HINDM1251AFSA	Indication Plate, Mains Switch (GF-9191E)	**
296	LHLDW1052AFZZ	Band, Wire	AA
297	PFLT-0345AF00	Felt, Variable Resistor	AA
298	QFSHD1001AGZZ	Holder, Fuse	AB
299	LHLDW1075AFZZ	Band, Wire	AA
300	LANGK0186AFFW	Bracket, Mains Switch (GF-9191E only)	AC
301	PZETV0052AFZZ	Cover, Mains Switch (GF-9191E only)	AA
F701	QFS-C122CAGNI	Fuse, 1.25AT	AE

REF. NO.	PART NO.	DESCRIPTION	CODE
J101	QJAKZ0073AFZZ	Jack Plate Assembly, EXT. MIC/REMOTE	**
J103	QJAKG0052AFZZ	Jack, PHONO	AG
J401	QJAKA0006AFZZ	Jack, MIX.MIC	AD
J603	QJAKJ0052AFZZ	Jack, HEADPHONES	AH
ME101	RMTRL0152AFZZ	Meter, VU/TUNING	AS
ME102	RMTRL0153AFZZ	Meter, VU/BATTERY	AS
PG501	QCNCM105JAFZZ	Plug, 9 Pin	AD
PG502	QCNCM175FAFZZ	Plug, 6 Pin	AC
PL601	RLMPM0089AFZZ	Lamp, Meter	**
PL602	RLMPM0089AFZZ	Lamp, Dial	**
SO101	QSOCD2554AFZZ	Socket, REC/PB	AF
SO102	QSOCD2268AFZZ	Socket, EXT.SP.	AE
SO103	QSOCD2268AFZZ	Socket, EXT.SP.	AE
SO501	QCNCW096JAFZZ	Socket, 9 Pin	AC
SO502	QCNCW146FAFZZ	Socket, 6 Pin	AB
SO901/ J901	QSOCZ2469AFZZ	Socket, Mains Supply with EXT. DC POWER Jack	AH
SP1	VSP0016P-244P	Speaker, Woofer	**
SP2	VSP0016P-244P	Speaker, Woofer	**
SP3	VSP0050T-124A	Speaker, Tweeter	AP
SP4	VSP0050T-124A	Speaker, Tweeter	AP
SW101	QSW-P0171AFZZ	Switch, Power and Function Selector	AV
SW102	QSW-S0214AFZZ	Switch, Record/Playback	AM
SW103	QSW-P0172AFZZ	Switch, Editor	AF
SW104	QSW-B0087AFZZ	Switch, Mixing	AG
SW105	QSW-B0095AFZZ	Switch, REC. Mode Selector	AF
SW106	QSW-B0087AFZZ	Switch, Tape Selector	AG
SW107	QSW-B0076AFZZ	Switch, FM Mute/Mode	AG
SW108	QSW-B0086AFZZ	Switch, Loudness	AF
SW109	QSW-B0091AFZZ	Switch, Meter/Light	AF
SW301	QSW-S0191AFZZ	Switch, Beat Cancel	AE
SW501	QSW-F0044AGZZ	Switch, Motor	AE
SW502	QSW-F0116AFZZ	Switch, APSS(REV)	AE
SW503	QSW-F0116AFZZ	Switch, APSS(FWD)	AE
SW504	QSW-F0044AGZZ	Switch, CUE/REV Muting	AE
SW701	QSOCE0551AFZZ	Switch, Mains Voltage Selector (GF-9191H/HB)	AG
	QSW-S0176AFZZ	Switch, Mains Supply (GF-9191E)	AP
TB1	QJAKF0052AFZZ	Terminal, FM EXT. ANT	**
	QCNW-0284AFZZ	Connecting Wire, 5 Pin	AC
	QCNW-0286AFZZ	Connecting Wire, 8 Pin	AC
	QCNW-0288AFZZ	Connecting Wire, 4 Pin	AB
	QCNW-0290AFZZ	Connecting Wire, 7 Pin	AC
	SPAKA0502AFZZ	Packing Add. (Left)	AG
	SPAKA0503AFZZ	Packing Add. (Right)	AG
	SPAKC1169AFZZ	Packing Case (GF-9191H)	**
	SPAKC1170AFZZ	Packing Case (GF-9191HB)	**
	SPAKC1179AFZZ	Packing Case (GF-9191E)	**
	SSAKH0087AGZZ	Polyethylene Bag	AB
	TINSZ0129AFZZ	Operation Manual (GF-9191H/HB)	**
	TINSE0572AFZZ	Operation Manual (GF-9191E)	**
	SSAKH0024AGZZ	Polyethylene Bag, Operation Manual	AA
	TTAGH0046AFZZ	Tag (GF-9191H/HB only)	**
	TMAPC0524AFZZ	Schematic Diagram (GF-9191H/HB)	–
	TMAPC0528AFZZ	Schematic Diagram (GF-9191E)	–
	QACCK0050AFZZ	Cord, Mains Supply (GF-9191H/HB)	AM
	QACCB0003AG0V	Cord, Mains Supply (GF-9191E)	AL